

Hip Hing Joint Venture

Hong Kong Convention and
Exhibition Centre Expansion
Project:

*Quarterly Environmental Monitoring
and Audit Report
(Feb 2009 - Apr 2009)*

May 2009

Environmental Resources Management

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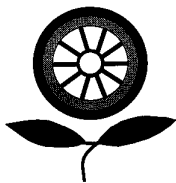
Reference 0050690

For and on behalf of ERM-Hong Kong, Ltd
Approved by: <u>Dr. Robin Kennish</u>
Signed: <u></u>
Position: <u>Director</u>
Certified by: <u></u> (Environmental Team Leader – Marcus Ip)
Date: <u>27 May 2009</u>

This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

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26 May 2009

Maunsell Consultants Asia Ltd
Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, N.T., Hong Kong

Attn: Ms Vera Chan

Dear Sir/Madam,

Hong Kong Convention Center Expansion Project
Quarterly Environmental Monitoring and Audit Report for February 2008 to April 2009
(Environmental Permit No. EP-239/2006/B)

With reference to the captioned document concerning the Quarterly EM&A report for February 2008 to April 2009 received from ERM dated 22 May 2009, we are pleased to provide our verification for the document pursuant to condition 3 of the Environmental Permit (EP) No. EP-239/2006/B.

Yours faithfully,
Nature & Technologies (HK) Limited

Ir Dr Gabriel C K Lam
Managing Director

- cc: - Hong Kong Trade Development Council (Attn: Mr. K. F. Chan)
- Hip Hing Ngo Kee Joint Venture (Attn: Mr. Eric Lau & Mr. William Tam)
- ERM (Attn: Mr. Marcus Ip)

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EXECUTIVE SUMMARY

The construction works for Hong Kong Convention and Exhibition Centre Expansion (previously known as HKCEC Atrium Link Extension) (EIAO Register No: AEIAR-100/2006) commenced on 1 August 2006. This is the eleventh quarterly Environmental Monitoring and Audit (EM&A) report presenting the EM&A work carried out during this period from 1 February 2009 to 30 April 2009 in accordance with the EM&A Manual.

Summary of Construction Works undertaken during the Reporting Period

The major construction works taken during the reporting period include the installation of building structure, the erection of steel posts for the west and east façades, the application of waterproofing on internal and roof structures, the installation of façade panel/louvers, fire shutter, smoke curtain, doors, wall granite, false ceiling, HVAC, partition walls, plumbing and town gas systems, escalators, electrical and fire services system, internal cladding, carpet tiles, planters, the erection of staircases, wall fitting out works and vinyl sheet flooring works and the preparation works for extraction of temporary marine piles.

Environmental Monitoring and Audit Progress

A summary of the monitoring activities in this reporting period is listed below:

24-hour Total Suspended Particulates (TSP) monitoring	15 times
1-hour TSP monitoring	47 times
Joint environmental site auditing	13 times

Air Quality

14 sets of 24-hour (at AM1), 15 sets of 24-hour (at AM2) and 46 sets of 1-hour TSP monitoring (at AM1) and 47 sets of 1-hour TSP monitoring (at AM2) were carried out at the designated monitoring stations (AM1 & AM2) during this quarter. No exceedance of Action and Limit Levels was recorded at the monitoring stations during this quarter.

Marine Water Quality

Five sets of marine water quality measurements were carried out at the designated monitoring stations W3, W4 and W5 during the preparatory works for extraction of marine piles starting from 20 April 2009 this quarter. Three exceedances of Action Level of turbidity were recorded on 27 April 2009. Investigations indicated that these exceedances were likely due to natural fluctuation in marine water quality rather than Project work.

Construction Waste Management

The major construction activities undertaken in the reporting period were installation of marine pile, construction of marine platform and pedestrian tunnel. A total of 610.0 tonnes of inert C&D materials and 3904.82 tonnes of C&D wastes were generated during this quarter. The C&D wastes and inert C&D materials generated from the Project were disposed of at SENT Landfill / Tseung Kwan O Area 137 temporary construction waste sorting facility and the public fill barging point at Quarry Bay respectively. A total of 6 tonnes of steel materials were generated from works over this quarter and sent to recycler. No chemical waste was collected during the reporting period by licensed chemical waste collector.

Effluent Discharge Sampling

Water sampling was conducted at Discharge Point 3 on 19 March 2009 to ensure the quality of treated effluent at three designated discharge points complies with the requirements of discharge license. The results show that the effluents were in compliance with the discharge limit stipulated in the Water Discharge Licence.

Environmental Non-conformance

Thirteen weekly joint environmental site audits were carried out by the ET. No non-compliance event is recorded during this quarter.

No environmental complaints or summons were received during this quarter.

1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) was appointed by Hip Hing Joint Venture as the Environmental Team (ET) to implement the Environmental Monitoring and Audit (EM&A) programme for Hong Kong Convention and Exhibition Centre Expansion (previously known as HKCEC Atrium Link Extension) (the Project).

1.1 PURPOSE OF THE REPORT

This is the eleventh quarterly EM&A report which summarizes the impact monitoring results and audit findings for the EM&A programme during the reporting period from **1 February 2009** to **30 April 2009**.

1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

*Section 1 : **Introduction***

details the scope and structure of the report.

*Section 2 : **Project Information***

summarizes background and scope of the Project, site description, project organization and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licences during the reporting period.

*Section 3 : **Environmental Monitoring Requirement***

summarizes the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels and Event / Action Plans.

*Section 4 : **Implementation Status on Environmental Mitigation Measures***

summarizes the implementation of environmental protection measures during the reporting period.

*Section 5 : **Monitoring Results***

summarizes the monitoring results obtained in the reporting period.

*Section 6 : **Environmental Non-conformance***

summarizes any environmental exceedance, environmental complaints and environmental summons received within the reporting period.

Section 7: **Review of EM&A Data and EIA Predictions**

compares and contrasts the EM&A data in the reporting period with the EIA predictions and annotates with explanation for any discrepancies.

Section 8: **Conclusion**

2.1 BACKGROUND

The Hong Kong Trade Development Council (HKTDC) is expanding its existing facilities to provide additional space for Hong Kong's leading trade fairs to be held at the Hong Kong Convention and Exhibition Centre (HKCEC). The Project is located in North Wan Chai and will occupy the aerial space between Phase I and Phase II of the HKCEC. The new Atrium Link Extension (ALE) will span across the water channel between Phase I and Phase II of the HKCEC to accommodate 3 main levels of Exhibition Hall Extensions. The level of the main roof of the Extension will be of similar height as that of the podium roof of the Phase I building. A northern row of permanent supporting columns will be located on land close to Expo Drive Central and similarly a southern row will land near to Convention Avenue. There will be no permanent intermediate columns in the waterway.

The major works activities for the ALE will comprise the following:

- Construction and demolition of the temporary footbridge;
- Demolition of the existing Atrium Link;
- Construction and demolition of a temporary working platform;
- Construction of foundations and pile caps for the ALE; and
- Construction of superstructure for the ALE.

The potential environmental impacts of the Project have been studied in the *"Hong Kong Convention and Exhibition Centre, Atrium Link Extension – Environmental Impact Assessment Report"* (EIAO Register No: AEIAR-100/2006). The EIA was approved on 21 April 2006 under the *Environmental Impact Assessment Ordinance* (EIAO). An Environmental Permit (EP-239/2006) for the works was granted on 12 May 2006. An application for variation of the Environmental Permit was made on 25 January 2007, an amended Environmental Permit (EP-239/2006/A) was granted on 12 February 2007. An application for further variation of the Environmental Permit was made on 18 April 2008, and an amended Environmental Permit (EP-239/2006/B) was granted on 12 May 2008. Under the requirements of Condition 3.1 of Environmental Permit EP-239/2006/B, an EM&A programme as set out in the EM&A Manual and its supplement is required to be implemented.

The construction works commenced on 1 August 2006 and are scheduled to be completed by June 2009.

2.2 *SITE DESCRIPTION*

The works areas of the Project are illustrated in *Annex A*.

2.3 *CONSTRUCTION ACTIVITIES*

A summary of the major construction activities undertaken in this quarter is shown in *Table 2.1*. The locations of the construction activities are presented in *Annex B*.

Table 2.1 Summary of Construction Activities Undertaken

Construction Activities Undertaken
<ul style="list-style-type: none">• Building Structure• Steel Post CHS Erection for Façade• Steel post RHS Erection for Façade• Installation of Façade Panel/Louvre• Installation of Partition Wall• Erection of Staircase• Installation of Fire Shutter• Installation of Smoke Curtain• Timber Door Installation• Application of Waterproofing for Internal Structures• Installation of Wall Granite• Installation of False Ceiling• Installation of HVAC• Installation of Electrical Facilities• Installation of Fire Services• Installation of Plumbing and Town Gas• Installation of Escalators• Installation of Internal Cladding• Wall Fitting Out Works• Installation of Vinyl Sheet Flooring• Installation of Carpet Tile• Installation of Planters• Preparatory works for extraction of temporary marine piles

2.4 *PROJECT ORGANISATION*

The Project organisation chart and contact details are shown in *Annex C*.

2.5 *STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since August 2006 is presented in *Table 2.2*.

Table 2.2 Summary of Environmental Licensing, Notification and Permit Status

Permit/ Licenses/ Notification	Reference	Validity Period	Remarks
Environmental Permit	EP-239/2006/B	Throughout the Contract -	Environmental Permit (EP) EP-239/2006 granted originally on 12 May 2006. Since then the EP have been varied twice. The latest revised EP was issued on 12 May 2008
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation	--	--	Notification on 23 June 2006
Discharge Licence under Water Pollution Control Ordinance	EP860/W10/XY 0145	N/A	-
Chemical Waste Producer Registration	WPN5213-134-H3125-01	N/A	Chemical waste types: spent paint, acid, alkaline, adhesive, diesel fuel, lubricating oil and bitumen.
Valid Construction Noise Permit for area inside the Atrium Link	GW-RS0713-08 GW-RS0755-08 GW-RS0207-09 GW-RS10345-08	Valid from 15 October 2008 to 15 March 2009 Valid from 31 October 2008 to 31 March 2009. Valid from 18 Mar to 31 Jul 2009 Valid from 31 December 2008 to 31 May 2009	

3.1 AIR QUALITY MONITORING

3.1.1 Monitoring Location

In accordance with the EM&A Manual, sampling for 24-hour and 1-hour Total Suspended Particulates (TSP) levels were conducted at the designated monitoring stations listed in *Table 3.1*. Map and photographs showing the monitoring stations are presented in *Annex D*.

Table 3.1 *Air Monitoring Stations*

Monitoring Station	Description
AM1	Pedestrian Plaza
AM2	Renaissance Harbour View Hotel Hong Kong

3.1.2 Monitoring Parameters, Frequency and Programme

Air quality monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 3.2*).

Table 3.2 *TSP Monitoring Parameter and Frequency*

Parameter	Frequency
24-hour TSP	Once per every 6 days
1-hour TSP	3 times per every 6 days

3.1.3 Action and Limit Levels

The Action and Limit levels were established in accordance with the EM&A Manual and are presented in *Table 3.3*.

Table 3.3 *Action and Limit Levels for Air Quality*

Parameter	Air Monitoring Station	Action Level (μgm^{-3})	Limit Level (μgm^{-3})
24-hour TSP	AM1	161	260
	AM2	168	260
1-hour TSP	AM1	327	500
	AM2	329	500

3.1.4 Monitoring Equipment

Continuous 24-hour and 1-hour TSP monitoring were performed using High Volume Samplers (HVS) with appropriate sampling inlets installed, located at the designated monitoring station. The performance specification of HVS complies with the standard method "Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)" as stipulated in US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B).

Table 3.4 summarizes the equipment that was used in the 24-hour and 1-hour TSP monitoring.

Table 3.4 TSP Monitoring Equipment

Monitoring Station	Equipment	Model (HVS, Calibration Kit)
AM1 (for 24-hr TSP)	HVS, Calibration Kit	GMW-9503, Tisch TE-5025A
AM2 (for 24-hr TSP)	HVS, Calibration Kit	GMW-9795, Tisch TE-5025A
AM1 (for 1-hr TSP)	HVS, Calibration Kit	GMW-9864, Tisch TE-5025A
AM2 (for 1-hr TSP)	HVS, Calibration Kit	GMW-8115, Tisch TE-5025A

3.1.5 Monitoring Methodology

Installation

The HVSs at AM1 and AM2 were placed at about 1.3 m above local ground level and about 4.3 m above local ground respectively. All of the HVSs were free-standing with no obstruction.

The following criteria were considered in the installation of the HVSs:

- horizontal platform with appropriate support to secure the samplers against gusty wind were provided at AM1 & AM2;
- a minimum of 2 m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues were nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and to gain access to the monitoring stations.

Preparation of Filter Papers by ETS-Testconsult Ltd

- glass fibre filters were labeled and sufficient filters that were clean and without pinholes were selected;
- all filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was 40%; and
- ETS-Testconsult Ltd, a HOKLAS accredited laboratory, implements comprehensive quality assurance and quality control programmes.

Field Monitoring

- the power supply was checked to ensure that the HVSs were working properly;
- the filter holder and the area surrounding the filter were cleaned;

- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;
- then the shelter lid was closed and secured with the aluminium strip;
- the HVSs were warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flowrate record sheet was set into the flow recorder;
- the flow rate of the HVSs was checked and adjust at around 0.6 -1.44 m³/min. The range specified in the EM&A Manual was between 0.6 - 1.7 m³/min;
- the programmable timer was set for a sampling period of 24 hours ± 1 hour, and the starting time, weather condition and the filter number were recorded;
- the initial elapsed time was recorded;
- at the end of sampling, the sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact;
- it was then placed in a clean plastic envelope and sealed;
- all monitoring information was recorded on a standard data sheet; and
- filters were sent to ETS-Testconsult Ltd for analysis.

3.1.6 *Maintenance and Calibration*

The HVSs and their accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.

The flow rate of each HVS with mass flow controller was calibrated using an orifice calibrator. Initial calibration of the dust monitoring equipments was conducted upon installation and prior to commissioning. Five-point calibration was carried out for HVSs using Tisch TE-5025A Calibration Kit. The calibration records for the HVSs are given in the respective monthly reports.

3.2 MARINE WATER QUALITY MONITORING

3.2.1 Monitoring Location

In accordance with the EM&A Manual, the marine water quality monitoring was conducted at the designated monitoring stations during the installation and removal of temporary marine piles listed in *Table 3.5*. The map and photographs showing the monitoring stations are presented in *Annex D*.

Table 3.5 Marine Water Quality Monitoring Locations

Station	Location	Intake Level	Easting	Northing
W3	Hong Kong Convention and Exhibition Centre Phase I Cooling Water Intake	7.5m below the existing pump house floor	835852	815907
W4	Wan Chai Tower/ Revenue Tower/ Immigration Tower Cooling Water Intake ^(a)	5m below the top of the existing sea wall	835944	815885
W5	Great Eagle Centre, China Resources Building Cooling Water Intake	5m below the top of the existing sea wall	835963	815886

Note:
(a) The cooling water intake for Wan Chai Tower / Revenue Tower/ Immigration Tower was partially relocated to the new pump house adjacent to Station W3.

3.2.2 Monitoring Parameters, Frequency and Programme

The marine water quality monitoring was conducted in accordance with *Table 3.6* during the period of installation and removal of temporary marine piles.

Table 3.6 Marine Water Quality Monitoring Parameters & Frequency

Parameter	Frequency	No. of Samples per Monitoring Event	Duration
Dissolved Oxygen (DO) Suspended Solids (SS) Turbidity	3 days per week at mid-flood & mid-ebb tides	2	During installation and removal of temporary marine piles.

Reference was made to the predicted tides at Quarry Bay, which is the tidal station nearest to the Project Site, published on the web site of Hong Kong Observatory (<http://www.hko.gov.hk/tide/eQUBtide.htm>).

Measurements of suspended solids (SS), turbidity in Nephelometric Turbidity Units (NTU) and dissolved oxygen (DO) in mgL⁻¹ were undertaken at the designated monitoring stations. The first parameter was determined in the laboratory with the latter three were measured in-situ.

3.2.3 Action and Limit Levels

The Action and Limit levels were established in accordance with the EM&A Manual and are presented in *Table 3.7*.

Table 3.7 Action and Limit Levels for Marine Water Quality

Parameter	Tide	Action Level	Limit Level
Dissolved Oxygen (DO) in mgL ⁻¹	Mid-Ebb	3.26	3.23
	Mid-Flood	3.25	3.14
Suspended Solids (SS) in mgL ⁻¹	Mid-Ebb	9.00	10.00
	Mid-Flood	8.18	8.40
Turbidity (Tby) in NTU	Mid-Ebb	5.32	6.19
	Mid-Flood	4.76	5.79

3.2.4 Monitoring Equipment and Methodology

Dissolved oxygen and temperature measuring equipment

The portable and weatherproof dissolved oxygen (DO) measuring meter (YSI Model 95) was used in the impact monitoring.

The DO measuring meter has a membrane electrode with automatic temperature compensation complete with a 50-foot cable. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring station.

Turbidity Measurement Instrument

The turbidity measurements were carried out on split water sample collected from the same depths of SS samples. A portable and weatherproof turbidity-measuring meter (HACH 2100P) was used in the impact monitoring. It has a photoelectric sensor capable of measuring turbidity between 0-1000 NTU. Response of the sensor was checked with certified standard turbidity solutions before the start of measurement.

Suspended Solids

Water samples for suspended solids measurement were collected by use of a transparent PVC cylinder (Kahlsico Water Sampler), packed in ice (cooled to 4°C without being frozen) and delivered to the laboratory as soon as possible after collection. The SS determination work started within 24 hours after the collection of the water samples, and the testing method of SS were carried by ETS-Testconsult Ltd (HOKLAS accredited laboratory) in accordance with the APHA 19ed 2540D⁽¹⁾ and the lowest detection limit is 1 mgL⁻¹. The Quality Assurance/Quality Control (QA/QC) procedures were followed as required by HOKLAS.

Water Depth Detector

A portable, battery-operated echo sounder (Speedtech instrument SM-5A) was used for the determination of water depth at each designated monitoring station.

⁽¹⁾ American Public Health Association Standard Methods for the Examination of Water and Wastewater.

Location of the Monitoring Sites

A hand-held GPS (MLR SP24) and together with a suitably scaled map were used for locating the marine water quality monitoring stations.

Calibration of Equipment

All in-situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout the marine water quality monitoring. The calibration records for the monitoring instruments are given in the respective monthly reports.

4 **IMPLEMENTATION STATUS OF ENVIRONMENTAL PROTECTION REQUIREMENTS**

4.1 **ENVIRONMENTAL SITE AUDITING**

Weekly site inspections were carried out by the ET. Thirteen site inspections were conducted on 5, 12, 19 and 27 February 2009; 6, 12, 19 and 26 March 2009, and 2, 6, 16, 23 and 29 April 2009 respectively. The major construction activities undertaken in the reporting period were the construction of floor structures and interior building features. The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. There was no non-compliance event recorded in the reporting period. The implementation status of environmental mitigation and status of relevant required submissions under the EP were reported as part of the monthly EM&A reports ⁽¹⁾. Relevant submissions made on these measures and requirements during these reporting periods are summarized in *Annex E*.

4.2 **EFFLUENT DISCHARGE SAMPLING**

In accordance with the discharge licence issued under WPCO, water sampling should be conducted at least quarterly to ensure the quality of treated effluent at operating discharge points complies with the requirements of discharge license. During the reporting period, one ⁽²⁾⁽³⁾ effluent sample monitoring was conducted at Discharge Point 3 on 19 March 2009. The results show that the effluent discharged from the project was in compliance with the discharge limit stipulated in the Water Discharge Licence.

4.3 **LANDSCAPE AND VISUAL MONITORING**

In accordance with *Section 6.7* of the EM&A Manual, bi-weekly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The monitoring has commenced since January 2007 and is conducted by Earthasia Limited. Landscape and visual mitigation measures were implemented by the Contractor and the implementation status is given in *Annex E*.

(1) The Monthly EM&A Reports for February 2009, March 2009 and April 2009 were submitted to the EPD on 18 March 2009, 22 April 2009 and 21 May 2009 respectively.

(2) Discharge point 1 is designated for discharge of treated effluents from plant room construction works near gate no.4 on Expo Drive Central. Effluents are no longer discharged upon completion of respective works, and therefore further effluent sampling and testing at Discharge point 1 are no longer conducted.

(3) Discharge point 2 is designated for discharge of treated effluents from works near gate no.1 on Expo Drive Central. Effluents are no longer discharged upon completion of works in the area, and therefore no further effluent sampling are conducted.

4.4

EFFECTIVENESS OF MITIGATION MEASURES AND MONITORING

The mitigation measures recommended in the EIA report and required by the EP are considered effective in minimizing environmental impacts.

The EM&A for the Project was conducted as scheduled during the reporting period. No non-compliance events were observed during site audits and no exceedances were recorded during this quarter. The EM&A programme is considered effective.

5.1 AIR QUALITY

The monitoring data at AM1 and AM2 were provided by ETS-Testconsult Ltd. 14 sets of 24-hour (at AM1), 15 sets of 24-hour (at AM2) and 46 sets of 1-hour TSP monitoring (at AM1) and 47 sets of 1-hour TSP monitoring (at AM2) were carried out at the designated monitoring stations (AM1 & AM2) during this quarter. The 24-hour TSP monitoring at AM1 scheduled on 21 February 2009 was disrupted by a failure of the power supply to the HVS. The power supply was restored on 27 February 2009. As a result, the 1-hour TSP monitoring at AM1 originally scheduled on 23 and 25 February 2009 was re-scheduled to 27 February 2009. The 1-hour TSP monitoring at AM1 scheduled on 27 April 2009 was cancelled due to a failure of power supply to the HVS. The power supply was restored in the evening on 27 April 2009. The monitoring data for 24-hour TSP and 1-hour TSP with weather conditions and graphical presentations are presented in *Annex F*.

The weather condition during the monitoring period varied from sunny to rainy. The local impacts observed near the monitoring stations were mainly vehicle emissions along Convention Avenue and Fleming Road.

No exceedance of Action and Limit Levels of 24-hour and 1-hour TSP was recorded at the monitoring stations during this quarter. The measured 24-hr TSP ranged from 55 - 135 $\mu\text{g}\text{m}^{-3}$ at AM1 and from 55 - 143 $\mu\text{g}\text{m}^{-3}$ at AM2.

5.2 MARINE WATER QUALITY

Marine water quality monitoring was conducted in the reporting period and the results of marine water quality monitoring were provided by ETS-Testconsult Ltd. Five sets of marine water quality measurements were carried out at the designated monitoring stations W3, W4 and W5 during the preparatory works for extraction of marine piles, which was started on 20 April 2009.

The monitoring data and graphical presentations are summarised in *Annex G*. The monitoring results can also be found in the web-site (<http://www.hkcecema.com/index.html>).

During the reporting period a total of three exceedances of marine water quality parameters of the monitoring stations were recorded and were summarised in *Table 5.1*. Notification of Exceedances with detailed investigation reports were issued to IEC when the exceedances were identified.

Table 5.1 *Summary of Record of Exceedance recorded during the Reporting Period*

Station	Record of Exceedance
W3	Exceedance of Action Level of Turbidity on 27 April 2009 at mid-flood
W4	Exceedance of Action Level of Turbidity on 27 April 2009 at mid-flood
W5	Exceedance of Action Level of Turbidity on 27 April 2009 at mid-flood

Exceedances of Action Level of turbidity were recorded on 27 April 2009. During the time of monitoring, no silty water was observed to be discharged from the site to the marine channel. It is considered that the exceedances of Action Level of Turbidity were likely due to natural fluctuation rather than Project works. In addition, the gravimetric measurement of SS in the laboratory, which is considered a more accurate and quantitative measurement, complied with the Action Level, indicating the marine water quality was acceptable as compared with the Action Level.

5.3 WASTE MANAGEMENT

Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D wastes. Reference has been made on the Monthly Summary Waste Flow Table prepared by Hip Hing Joint Venture (*Annex H*).

With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting period are summarized in *Table 5.1*.

Table 5.2 *Quantities of Waste Generated from the Project*

Month / Year	Quantity		
	C&D Materials (inert) ^(a)	C&D Wastes (non-inert) ^(b)	Chemical Waste
February 2009	105.0 tonnes	2196.85 tonnes (no steel materials were collected and recycled)	0
March 2009	305.0 tonnes	1181.65 tonnes (including 3 tonnes of steel materials were collected and recycled)	0
April 2009	200.0 tonnes	526.32 tonnes (including 3 tonnes of steel materials which were collected and recycled)	0
Total	610.0 tonnes	3,904.82 tonnes (including 6 tonnes steel material which were collected and recycled)	0

Notes:

- (a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil. No inert C&D materials were reused in this Project. Non-reused inert C&D materials were disposed at the public fill barging point at Quarry Bay.
- (b) C&D wastes include steel materials generated from demolition of footbridge, the existing Atrium Link and working platform, paper / cardboard packaging waste, chemical waste and other wastes such as general refuse. A total of 6 tonnes of steel material were sent to recycler and the remaining C&D wastes other than general refuse were disposed of at SENT Landfill / Tseung Kwan O Area 137 temporary construction waste sorting facility.

A total of 610.0 tonnes of inert C&D materials and 3,904.82 tonnes of C&D wastes were generated during the reporting period. The C&D wastes and inert C&D materials generated from the Project were disposed of at SENT Landfill / Tseung Kwan O Area 137 temporary construction waste sorting facility and the public fill barging point at Quarry Bay respectively. A total of 6 tonnes of steel materials from works were generated and recycled in this quarter. No chemical waste was collected during the reporting period by licensed chemical waste collector.

6 ENVIRONMENTAL NON-CONFORMANCE

6.1 SUMMARY OF ENVIRONMENTAL EXCEEDANCE

No exceedance of the Action and Limit Levels of 24-hour and 1-hour TSP was recorded at monitoring stations during this quarter.

Three exceedances of the Action Level of marine water quality parameters were recorded at monitoring stations during the reporting period. Details of the exceedance are summarized in *Table 5.1*.

6.2 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

No non-compliance event was recorded during this quarter.

6.3 SUMMARY OF ENVIRONMENTAL COMPLAINT

No complaint was received during this quarter.

6.4 SUMMARY OF ENVIRONMENTAL SUMMONS AND PROSECUTION

There was no summons or prosecution on environmental matters during this quarter.

7.1 AIR QUALITY

Since qualitative assessment of dust impact was conducted during construction phase in the EIA, a comparison was made against monitoring results and the Hong Kong Air Quality Objectives (HKAQO) (*Table 7.1*).

Table 7.1 Comparison of the HKAQO and Air Quality Monitoring Results

Month	Monitoring Stations	Corresponding ASR in EIA	HKAQO,	Measured 24 hour TSP	
			μgm^{-3} 24 hour ^(a)	Monitoring Results, μgm^{-3} ^{(a) (b)}	
				Average	Range ⁽²⁾
February 2009	AM1	AM8	260	83	23 - 160
	AM2	AM6	260	74	14 - 161
March 2009	AM1	AM8	260	83	23 - 160
	AM2	AM6	260	74	14 - 161
April 2009	AM1	AM8	260	83	23 - 160
	AM2	AM6	260	74	14 - 161

Notes:

(a) 24-hour TSP criterion under HKAQOs was used.

(b) Average and range of data were calculated for the period of monitoring between the commencement of the construction works and this quarter.

The monitoring results show that the average and range of 24-hour TSP levels measured since the commencement of the construction works were well below the 24-hour TSP criterion in the HKAQO. Recommended mitigation measures in *Section 4.24* of EIA were implemented throughout the construction period and were considered effective.

7.2 MARINE WATER QUALITY

The hydrodynamic modelling assessment undertaken in the approved EIA Report was targeted at assessing the potential effects of the marine works on the flushing capacity of the water channel during the construction phase and no prediction was made on the change in marine water quality, hence no comparison can be made with the monitoring results.

7.3 WASTE MANAGEMENT

The estimated amount of waste generated in this project and the accumulated quantities of waste generated up to the reporting period are presented in *Table 7.2*. Recommended mitigation measures in *Sections 6.35* to *6.41* of the EIA report are implemented during the reporting period. These measures are regarded as effective.

Table 7.2 Comparison of the Estimated Amount and the Actual Amount of Waste Generated

Type of Material	Estimated Amount of C&D Materials in EIA (inert & non-inert)	Accumulated Actual Amount of C&D Materials Recorded ^(a) (inert & non-inert)
Demolition of temp. footbridge	585 tonnes	0 tonne
Demolition of existing Atrium Link	4,680 tonnes	2,681.5 tonnes
Demolition of temp. working platform	390 tonnes	0 tonne
Construction of foundations and pile caps	20,000 tonnes	25,905.4 tonnes
General Refuse	Insignificant	5690.9 tonnes
Chemical Waste	Small	288 Litres

Note:
(a) The actual amount of C&D Materials was recorded since the commencement of construction works in August 2006.

7.4

CONCLUSION OF THE REVIEW

The EIA predictions and the monitoring results since the commencement of construction works have been reviewed. The EIA concluded that the Project would not pose adverse impacts to the environment, and the monitoring results also indicated that the construction of the Project did not pose adverse impacts to the environment. Recommendations given in the EIA are also considered to be adequate and effective for minimising the environmental impacts.

This Eleventh Quarterly Environmental Monitoring and Audit (EM&A) Report presents the EM&A work undertaken during the period from 1 February 2009 to 30 April 2009 in accordance with the EM&A Manual and the requirement under EP-239/2006B.

14 sets of 24-hour (at AM1), 15 sets of 24-hour (at AM2) and 46 sets of 1-hour TSP monitoring (at AM1) and 47 sets of 1-hour TSP monitoring (at AM2) were carried out at the designated monitoring stations (AM1 & AM2) during this quarter. The 24-hour TSP monitoring at AM1 scheduled on 21 February 2009 was disrupted by a failure of the power supply to the HVS. The power supply was restored on 27 February 2009. As a result, the 1-hour TSP monitoring at AM1 originally scheduled on 23 and 25 February 2009 was re-scheduled to 27 February 2009. The 1-hour TSP monitoring at AM1 scheduled on 27 April 2009 was cancelled due to a failure of power supply to the HVS. The power supply was restored in the evening on 27 April 2009. No exceedance of Action and Limit Levels was recorded at the monitoring stations during this quarter.

Five sets of marine water quality measurements were carried out at the designated monitoring stations W3, W4 and W5 during the preparatory works for extraction of marine piles starting from 20 April 2009 this quarter. Three exceedances of the Action Level of marine water quality parameters were recorded at monitoring stations during this quarter. Details of the exceedance are summarized in *Table 5.1*.

No non-compliance event was recorded during this quarter.

No complaint and summons/prosecution was received during this quarter.

Water sampling was conducted at Discharge Point 3 on 19 March 2009 to ensure the quality of treated effluent at operating discharge points complies with the requirements of discharge license. The results show that the effluents were in compliance with the discharge limit stipulated in the Water Discharge Licence.


The ET will keep track of the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Annex A

Location of Works Areas

Key

 Proposed Atrium Link Extension

 Existing Atrium Link

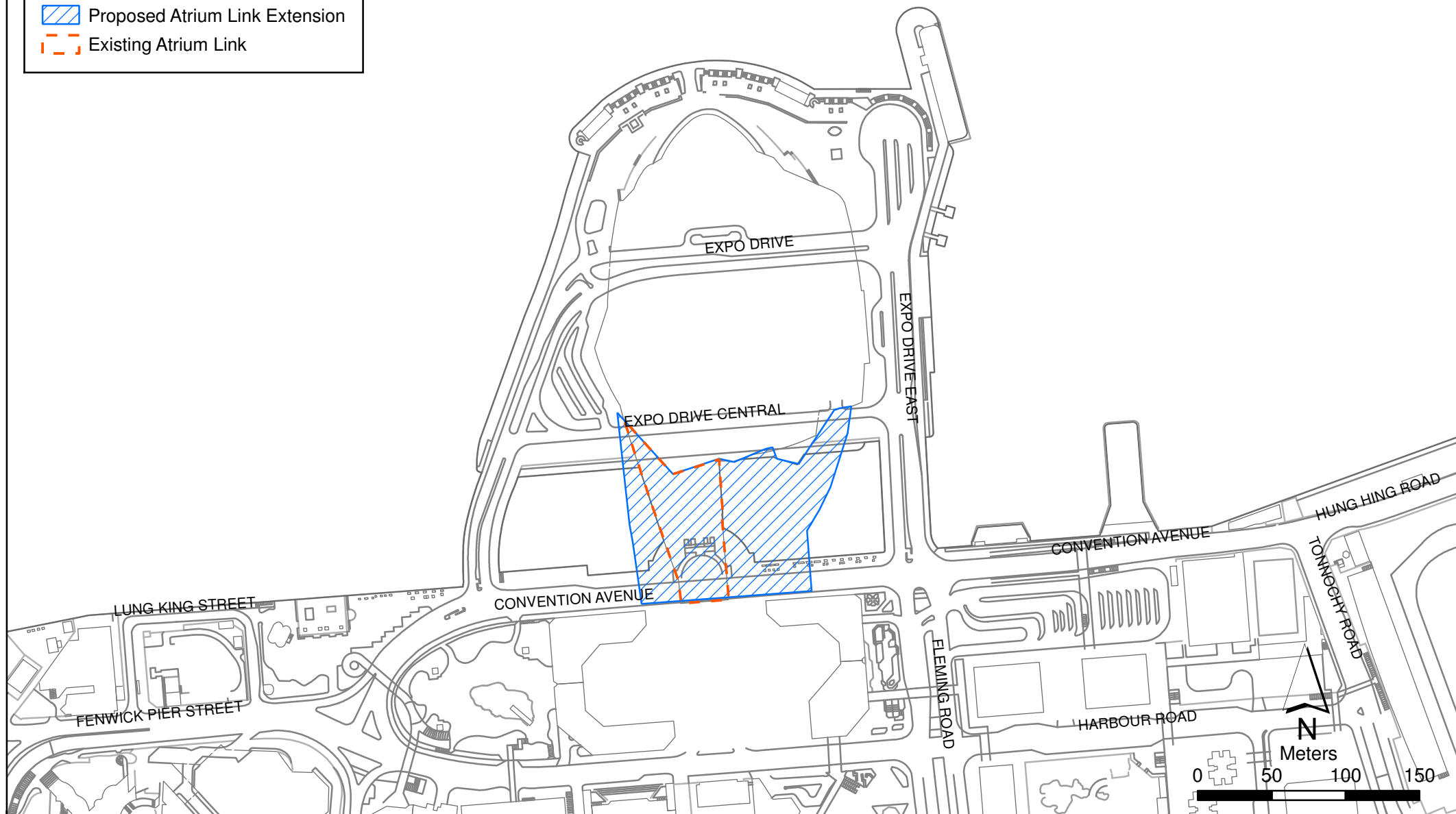


Figure A1

Location of Atrium Link Extension



Annex B

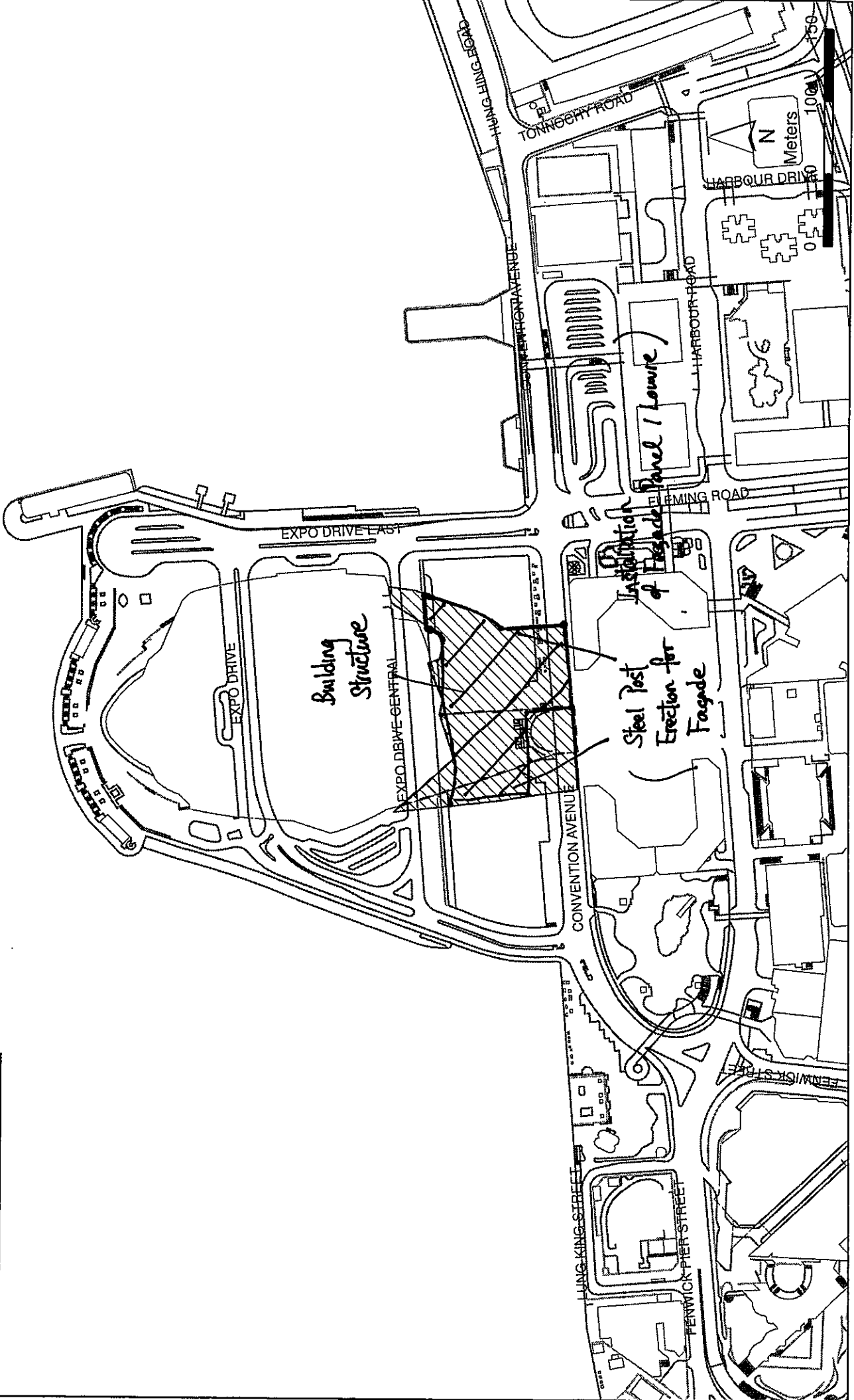
Location of Construction Activities during the Reporting Period

Summary of Works for February 2009

Description	Location
Building Structure	Grid A1-E
Installation of Façade Panel/Louvre	West and East Façade
Steel CHS Post Erection for Façade	West Façade
Steel Post RHS Erection for Façade	East Façade
Partition Wall	
Staircase Erection	
Fire Shutter Installation	
Smoke Curtain Installation	
Door Installation	
Waterproofing (Internal)	
Wall Granite	
False Ceiling	
HVAC Installation	
Electrical Installation	
F.S. Installation	
Plumbing and Town Gas Installation	
Escalator Installation	

Key

-  Proposed Atrium Link Extension
-  Existing Atrium Link




Annex F

24-hour and 1-hour TSP Monitoring Results

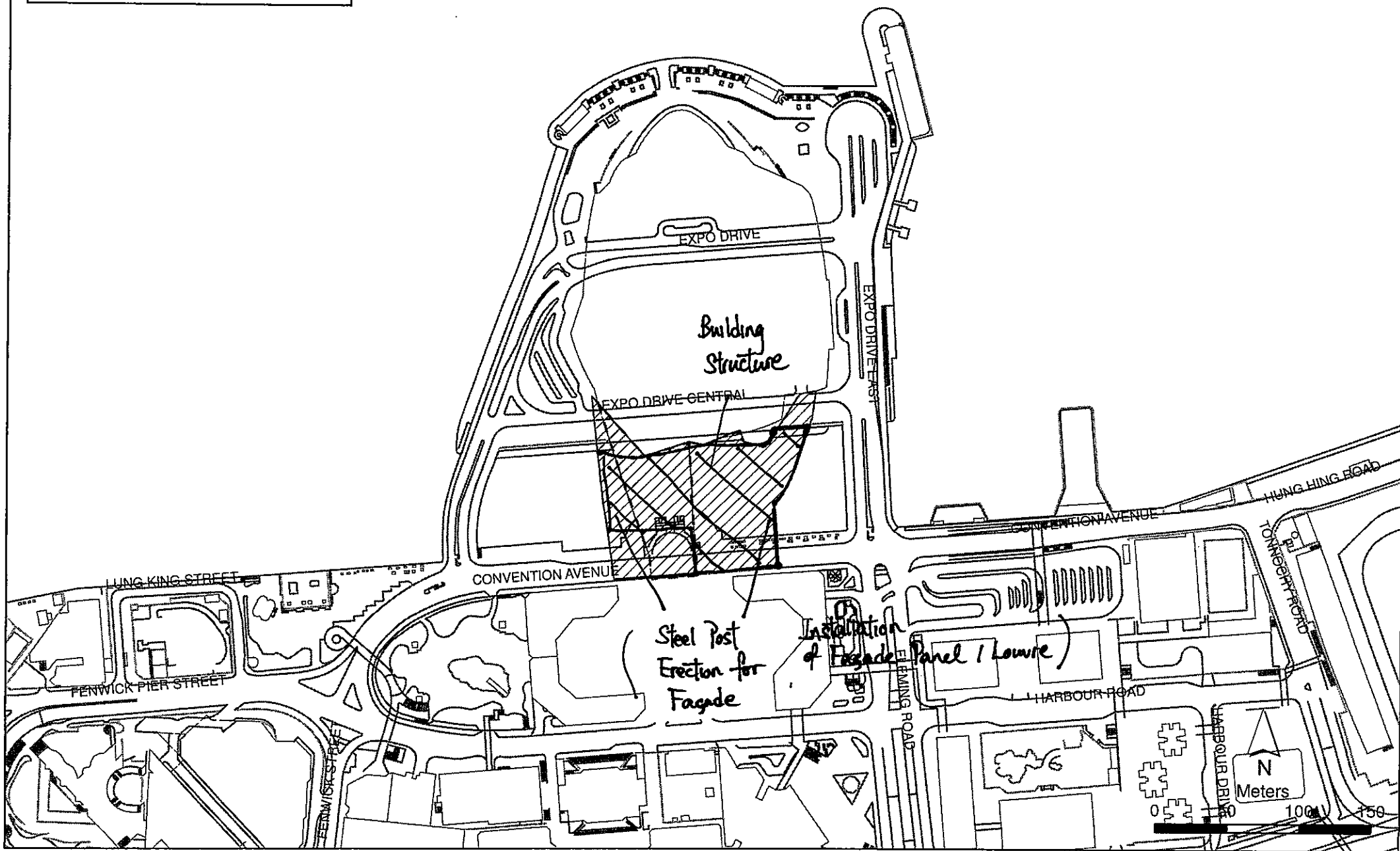
Summary of Works for March 2009

Description	Location
Building Structure	Grid A1-E
Installation of Façade Panel/Louvre	West and East Façade
Steel CHS Post Erection for Façade	West Façade
Steel Post RHS Erection for Façade	East Façade
Partition Wall	
Staircase Erection	
Fire Shutter Installation	
Smoke Curtain Installation	
Door Installation	
Waterproofing (Internal)	
Wall Granite	
False Ceiling	
HVAC Installation	
Electrical Installation	
F.S. Installation	
Plumbing and Town Gas Installation	
Escalator Installation	

Key

 Proposed Atrium Link Extension



 Existing Atrium Link

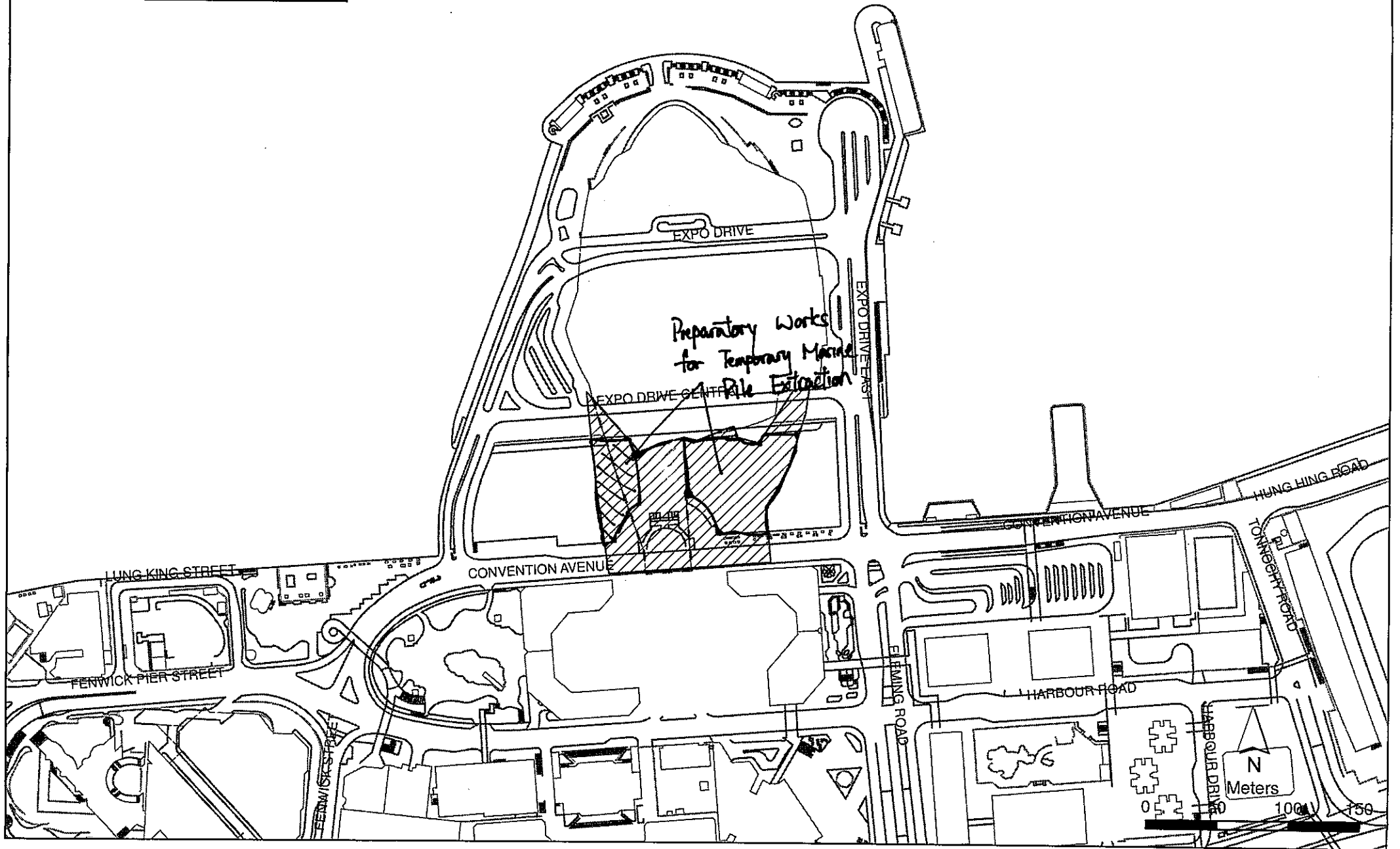


Summary of Works for April 2009

Description	Location
Installation of Façade Panel/Louvre	West and East Façade
Timber Door Installation	
Waterproofing (Internal & Roof)	
Wall Granite	
False Ceiling	
HVAC Installation	
Electrical Installation	
F.S. Installation	
Plumbing and Town Gas Installation	
Internal Cladding Installation	
Wall Fitting Out Works	Foyers
Vinyl Sheet Flooring Works	
Carpet Tile Installation	
Planter Works	Main Roof
Preparatory Works for Marine Pile Extraction	Marine Platform

Key

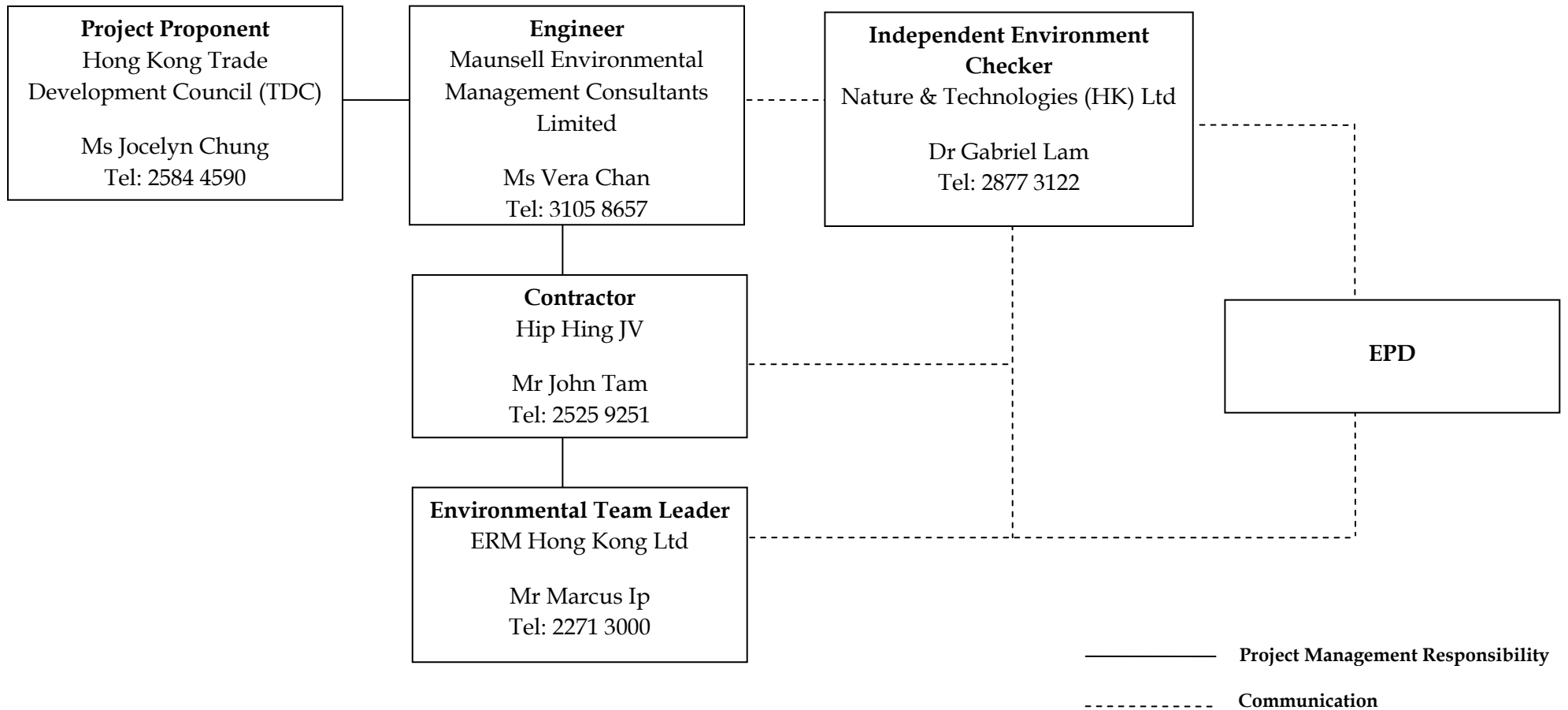
-  Proposed Atrium Link Extension
-  Existing Atrium Link



Annex C

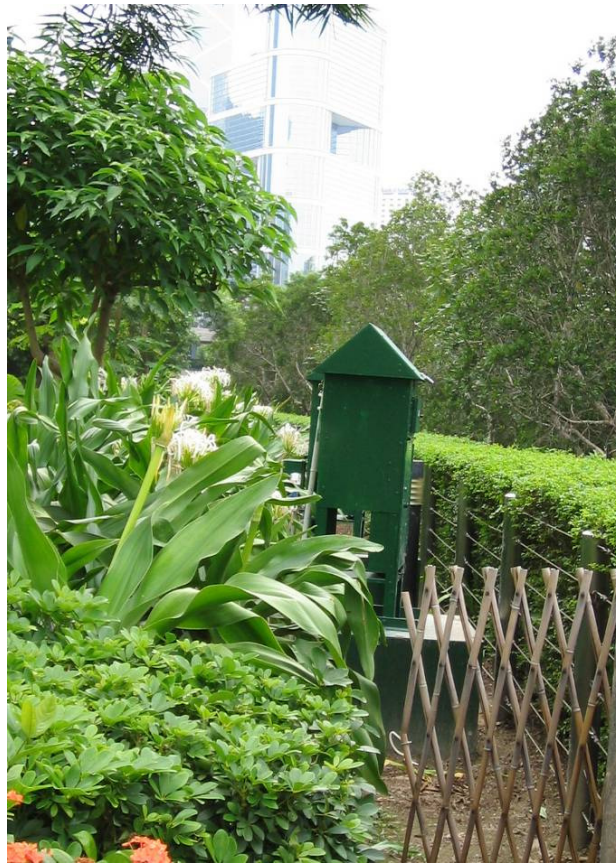
Project Organization Chart and Contact Detail

Project Organization (with contact details)



Annex D

Locations of Air and Water Quality Monitoring Stations



Air Quality Monitoring Station (AM1)



Air Quality Monitoring Station (AM2)

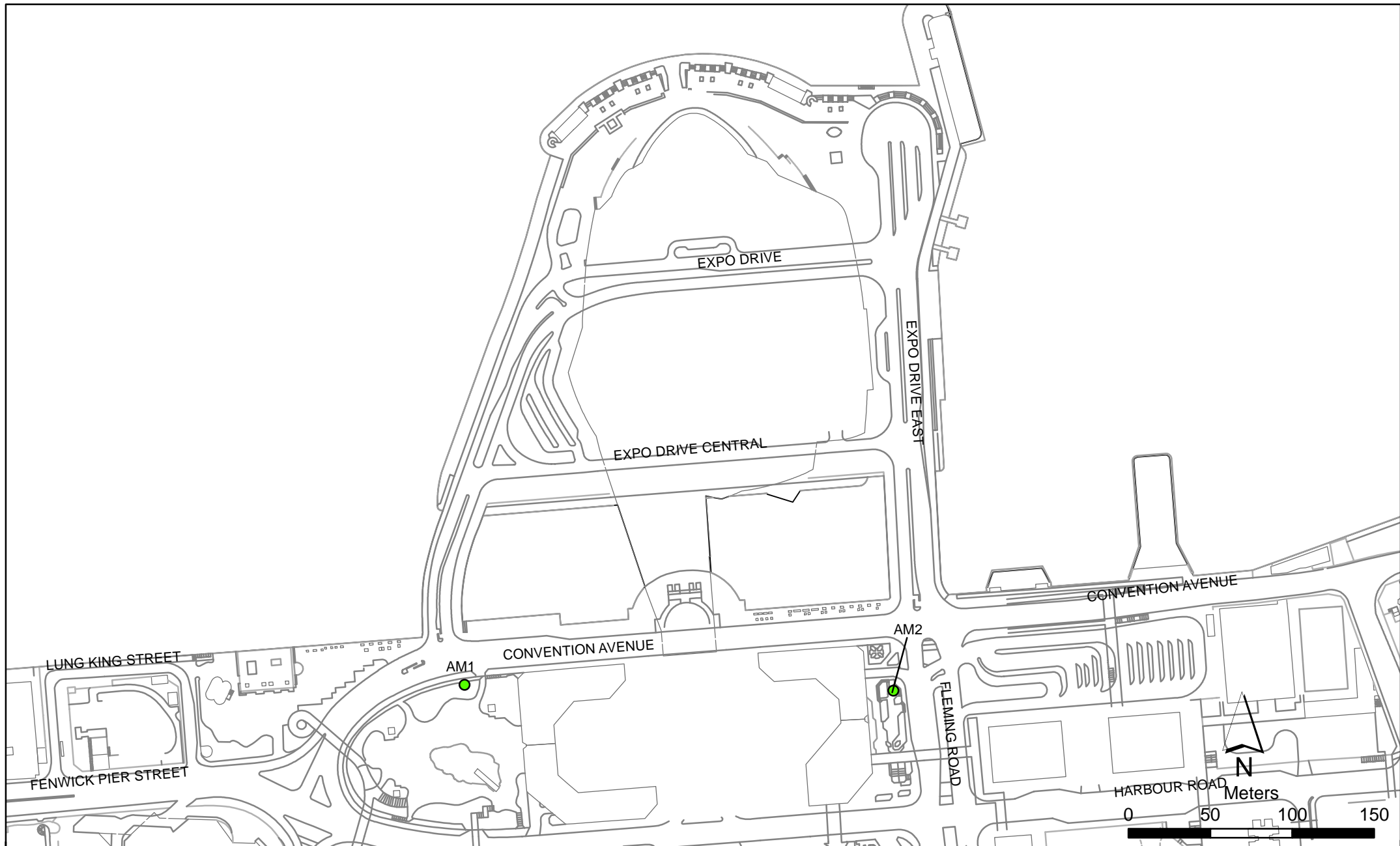


Figure D1

Air Quality Monitoring Station

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Date: 08/09/2006

Environmental
Resources
Management





Water Quality Monitoring Location – Station W3



Water Quality Monitoring Location – Stations W4 and W5

Monitoring Station	Description	Easting	Northing
3	Hong Kong Convention and Exhibition Centre Phase I Cooling Water Intake	835852.3	815907.0
4	Wan Chai Tower/Revenue Tower/Immigration Tower Cooling Water Intake	835944.1	815885.0
5	Great Eagle Centre/China Resources Building Cooling Water Intake	835963.4	815886.5

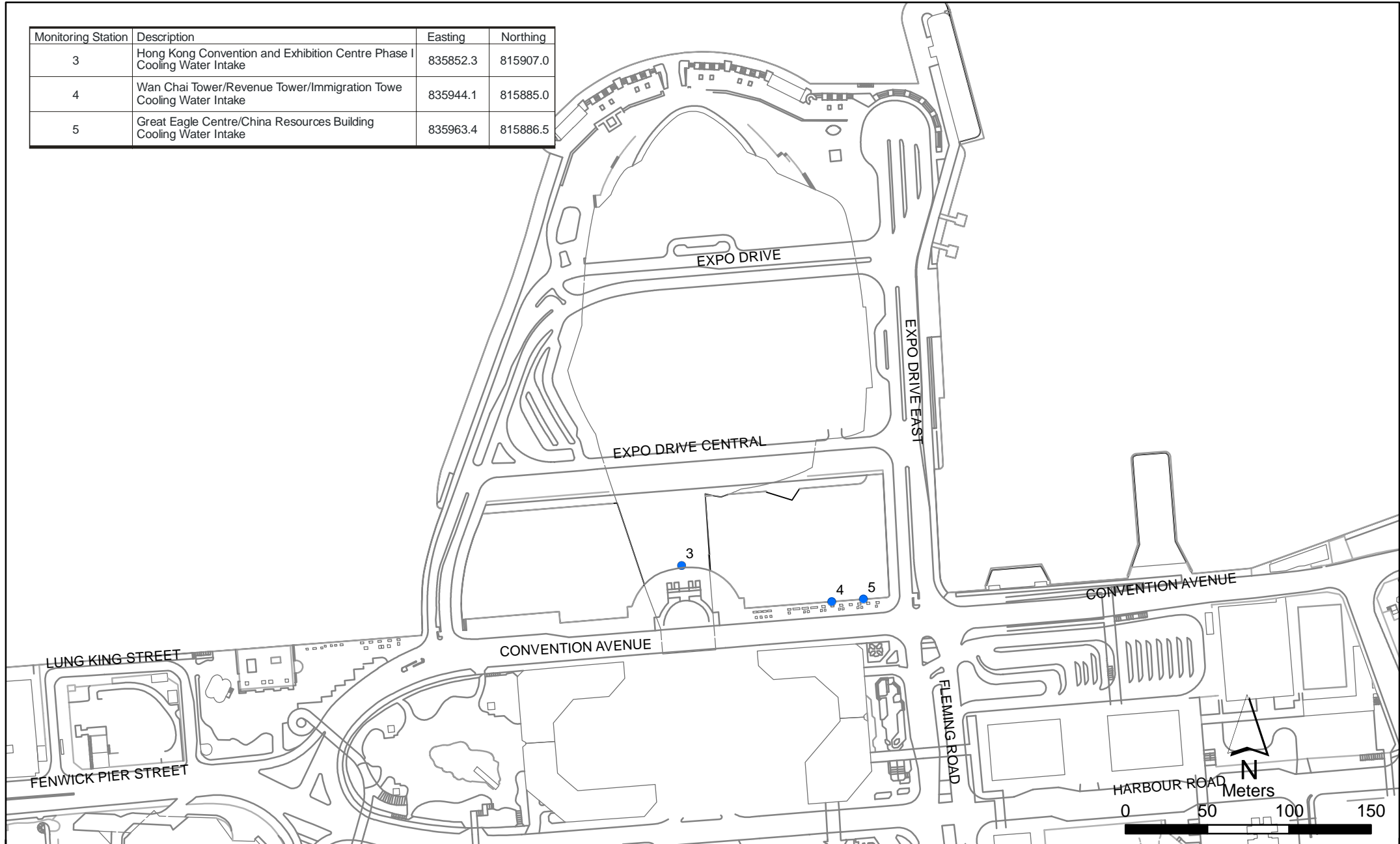


Figure D2

Marine Water Quality Monitoring Station

Annex E

Summary of Implementation Status

Annex E - Summary of Environmental Protection / Mitigation Activities

Environmental Permit No. EP-239/2006/B

EP Condition Ref	Submission	Action Required by the Permit Holder	Implementation Status
Measures for Mitigating Water Quality Impact			
2.4	Method statement on silt screens for seawater intakes (including design and maintenance requirements)	2 weeks before commencement of marine pile installation works	Method statement was submitted to the EPD on 21/6/06. Method statement (Revision A) was submitted to the EPD on 29/9/06. Method statement (Revision B) and supplementary information was submitted to the EPD on 23/5/07 and 18/6/07 respectively.
2.5	Method statement on silt curtain system for marine piling works (including design and maintenance requirements)	2 weeks before commencement of marine pile installation works	Method statement was submitted to the EPD on 15/9/06.
2.8	Design drawings specifying pile dimension and layout	2 weeks before commencement of marine pile installation works	Marine pile layout (final stage) was submitted to the EPD on 15/2/07. Revised marine pile layout (final stage) was submitted to the EPD on 26/3/07.
Measures for Mitigating Air Quality Impact			
2.9	Design drawings of ventilation facility for fresh air intakes (req'd only before operation of Project)	2 weeks before commencement of installation of ventilation facility	---
Measures for Mitigating Landscape and Visual Impact			
2.10	Implementation programme for landscape and visual mitigation measures (for both construction and operational phases of Project)	Within 6 months after commencement of construction of Project	Implementation programme (CM01, CM04 and CM05) was submitted to the EPD on 8/12/06.
2.10	Details of each landscape and visual mitigation measures package (incl plans)	2 weeks before implementation of a particular mitigation package	Proposal on protection and transplantation of existing trees was submitted to the EPD on 8/12/06. Proposal for CM03 was submitted to the EPD on 8/12/06. Proposal for CM01, CM04 and CM05 was submitted to the EPD on 15/12/06. CM01 Rev 1 was submitted to the EPD on 22/1/07. Proposal CM02 was submitted to the EPD on 13/3/07. Proposal for OM01 was submitted to the EPD on 15/11/07.
3.2	Baseline Monitoring Report	One week before the commencement of construction	Report was submitted to the EPD on 24/7/06 and comments from the EPD was received on 3/8/06. Revised report was submitted to EPD on 17/8/06 and no further comments received.

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
<i>Construction Phase</i>			
Air Quality	<p>The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimize construction dust impact. A number of practical measures are listed below:</p> <ul style="list-style-type: none"> • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • all dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet; • the height from which excavated materials dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading; • the load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise. 	Work site / during construction	Δ

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
<i>Operational Phase</i>			
Air Quality	Some fresh air intakes of the Hong Kong Convention and Exhibition Centre Phase I, Renaissance Harbour View Hotel and Grand Hyatt Hotel (ASRs A4, A5 and A6) should be re-diverted to the new air vent shaft provided for Atrium Link Extension where fresh air intake located at +55.8mPD.	Location of ASRs A4, A5 & A6 / Design & Operation Stage (Long-term and Interim Scenario)	√. Notes: Proposal for diversion of fresh air intakes was submitted on 17 Mar 2009 to EPD. Diversion works of fresh air intake have been completed.
Air Quality	Monitoring of NO ₂ concentration underneath the Atrium Link Extension should be conducted.	Underneath the deckover / The first six months upon completion of the ALE.	Measures not required until commencement of operational phase
<i>Construction Phase</i>			
Noise	<p>Good Site Practice:</p> <ul style="list-style-type: none"> only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program; mobile plant, if any, should be sited as far from NSRs as possible; machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; <p>Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.</p>	Construction work areas / Construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
<i>Operational Phase</i>			
Noise	<p>The following noise reduction measures should be considered as far as practicable during detailed design:</p> <ul style="list-style-type: none"> • choose quieter plant such as those which have been effectively silenced; • include noise levels specification when ordering new plant; • locate fixed plant away from any NSRs as far as practicable; • locate fixed plant in plant rooms with thick walls or specially designed enclosure; • locate noisy machines in basement or a completely separate building; and • develop and implement a regularly scheduled plant maintenance programme in order to maintain controlled level of noise. 	Plant Room / Design and Operation Stage	Relevant design and plant procurement procedures to commence at a later stage
<i>Construction Phase</i>			
Water Quality	There should be no permanent structure in the water channel.	At the ALE sea channel / during operational phase	√
Water Quality	No dredging and no reclamation should be carried out for the Project.	At work sites / during construction phase	√
Water Quality	The marine pile layout as shown in Figure 3 of the Environmental Permit should be adopted. No more than approximately 80 numbers of temporary marine piles should be installed in the ALE sea channel during the construction phase. The dimension of each temporary marine pile should be 800mm nominal diameter. These piles should be driven into position and internal space should not be excavated, i.e. left as soil. No dredging or soil /sediment excavation should be carried out. Marine piles would be removed by reverse driving.	At work sites / during construction phase	√
Water Quality	Two layers of silt curtain should be installed around each of the marine piling and pile extraction locations. The proposed silt curtain should be extended to seabed with sinker blocks and regularly inspected and maintained to ensure it is serviceable.	At marine work sites and nearby seawater intakes / during marine piling and marine pile extraction	√ Notes: The preparatory works for temporary marine piles have been started on 20 April 2009. Marine works are anticipated to start in May

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	All marine works should be carried out in a controlled manner such that release of sediments into the marine environment would be minimized. All wastewater generated from the piling activities should be collected and be treated before controlled discharge. Spoil should also be properly collected for proper disposal.		2009.
Water Quality	In view of the close vicinity of the seawater intakes to the work site, silt screens are recommended to be deployed at the seawater intakes shown in Figure 5.2 of the EIA report during the whole construction period. Silt screens to be provided at seawater intakes should be regularly checked and maintained to ensure that they are serviceable. Refuse collection vessel should be mobilized on a need basis to collect any floating refuse lost from/ trapped at the work site during the construction period.	At seawater intakes / during the whole construction period	√ Notes: The preparatory works for temporary marine piles have been started on 20 April 2009. Marine works are anticipated to start in May 2009.
Water Quality	Surface run-off from construction sites should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sedimentation basins. Channels or earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries should be provided where necessary to intercept storm runoff from outside the site so that it will not wash across the site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks. Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. Any practical options for the diversion and re-alignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains. Minimum distances of 100 m should be maintained between the discharge points of construction site runoff and the nearby saltwater intakes.	Works areas / construction period	Δ√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	<p>There is a need to apply to EPD for a discharge license for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge license. All the runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS. Reuse and recycling of the treated effluent can minimize water consumption and reduce the effluent discharge volume. The beneficial uses of the treated effluent may include dust suppression, wheel washing and general cleaning. It is anticipated that only a small quantity of wastewater would be generated from the works areas. Any effluent discharge from the construction activities should be diverted away from the sea channel so as to avoid adverse water quality impact. Construction works should be programmed to minimize excavation works in rainy seasons (April to September). If excavation in soil could not be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil erosion, temporary exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest / edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.</p>	Works areas / construction period	√
Water Quality	<p>Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.</p> <p>Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations</p>	Works areas / construction period	Δ

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>should be discharged into storm drains via silt removal facilities.</p> <p>Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.</p> <p>Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.</p>		
Water Quality	Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis.	Works areas / construction period	Δ
Water Quality	Under normal circumstances, groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction should be discharged into storm drains after the removal of silt in silt removal facilities.	Works areas / construction period	√
Water Quality	Water used in ground boring and drilling or rock /soil anchoring should as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.	Works areas / construction period	√
Water Quality	Wastewater generated from the washing down of mixing trucks and drum mixers and similar equipment should whenever practicable be recycled. The discharge of wastewater should be kept to a minimum.	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>To prevent pollution from wastewater overflow, the pump sump of any water recycling system should be provided with an on-line standby pump of adequate capacity and with automatic alternating devices.</p> <p>Under normal circumstances, surplus wastewater may be discharged into foul sewers after treatment in silt removal and pH adjustment facilities (to within the pH range of 6 to 10). Disposal of wastewater into storm drains will require more elaborate treatment.</p>		
Water Quality	<p>All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads.</p> <p>A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.</p>	Works areas / construction period	√
Water Quality	<p>Bentonite slurries used in diaphragm wall and bore-pile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis.</p> <p>If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.</p>	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm drains.</p> <p>Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable. Discharge of sterilization effluent should be properly pre-treated for compliance with TM/WPCO requirements, such as but not limited to total residual chlorine.</p>	Works areas / construction period	√
Water Quality	<p>Effluent discharges from building construction and other construction site activities are subject to WPCO control. Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains.</p> <p>Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary.</p>	Works areas / construction period	√
Water Quality	<p>Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tinkered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters.</p>	Works areas / construction period	No acidic wastewater will be generated.
Water Quality	<p>Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul</p>	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>sewer via grease traps capable of providing at least 20 minutes retention during peak flow.</p> <p>Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptors with peak storm bypass.</p> <p>Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.</p>		
Water Quality	<p>It is recommended to provide sufficient chemical toilets in the works areas. The toilet facilities should be more than 30 m from the seafront or any watercourse. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis.</p> <p>Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment. Regular environmental audit on the construction site can provide an effective control of any malpractices and can encourage continual improvement of environmental performance on site.</p>	Works areas / construction period	√
Water Quality	<p>Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.</p>	Works areas / construction period	√
Water Quality	<p>Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and</p>	Works areas / construction period	Δ

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.</p> <p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> • suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport; • chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and • storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. 		
Water Quality	<p>To minimize the potential water quality impacts from the construction works located at or near the storm system or seafront, the following mitigation measures should be adopted:</p> <ul style="list-style-type: none"> • the use of less or smaller construction plants may be specified to reduce the disturbance to the seabed; • temporary sewerage system should be designed to prevent wastewater from entering the storm system and sea; • temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works; • stockpiling of construction materials and dusty materials should be covered and located away from any water courses; • construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers; • construction activities, which generate large amount of 	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>wastewater, should be carried out in a distance away from the waterfront, where practicable;</p> <ul style="list-style-type: none"> • mitigation measures to control site runoff from entering the nearby water environment should be implemented to minimize water quality impacts. Surface channels should be provided along the edge of the waterfront within the work sites to intercept the runoff; • construction effluent, site run-off and sewage should be properly collected and/or treated; • proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert/sea; and • supervisory staff should be assigned to station on site to closely supervise and monitor the works. 		
Water Quality	<p>If monitoring of the treated effluent quality from the Works Areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. The contractor should submit detailed monitoring programme to EPD for approval before commencement of the construction activities.</p>	Works areas / construction period	√
Water Quality	<p>Monitoring of the water quality at the seawater intakes inside the ALE sea channel should be conducted.</p>	ALE sea channel / Before construction period and during installation and removal of temporary marine piles.	√
Water Quality	<p>All barges should be fitted with tight seals to their bottom opening to prevent leakage of materials. The decks of all vessels should be kept tidy and free of oil or other substances that might be accidentally or otherwise washed overboard. Loading of barges should be controlled to prevent splashing of materials to the surrounding environment and barges should under no circumstances be filled to a level which would cause overflowing of material or sediment laden water during loading and transportation. All barges should maintain adequate clearance between vessels and the seabed at all states of the tide and</p>	Works areas / construction period	No barge will be required for the project.

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	should operate at a reduced speeds to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.		
Water Quality	Connection of sewage generated from the ALE will be connected to the existing public sewer. For handling, treatment and disposal of other operational stage effluent, the practices outlined in ProPECC PN 5/93 should be adopted where applicable. Consensus from DSD should be sought on technical details of the drainage and sewerage proposals.	Project site / design and construction period	√
<i>Construction Phase</i>			
Waste	<p>Recommendations for good site practices during the construction activities include:</p> <ul style="list-style-type: none"> • nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all Wastes generated at the site; • training of site personnel in proper waste management and chemical handling procedures; • provision of sufficient waste disposal points and regular collection of waste; • appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. 	Work site / during the construction period	√
Waste	<p>Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> • sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (ie soil, broken concrete, metal, etc); • segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or 	Work site / during the construction period	Δ

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>recycling of materials and their proper disposal;</p> <ul style="list-style-type: none"> encourage collection of aluminum cans by individual collectors by providing separate labeled bins to enable this waste to be segregated from other general refuse generated by the work force; proper storage and site practices to minimize the potential for damage to contamination of construction materials; and plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste. 		
Waste	<p><u>General Refuse</u></p> <p>General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</p>	Work site / during the construction period	Δ
Waste	<p><u>Construction and Demolition Material</u></p> <ul style="list-style-type: none"> In order to minimize the impact resulting from collection and transportation of C&D material for off-site disposal, the C&D material from the following construction activities should be reused and recycled as far as possible to reduce the net amount of C&D material generated from the Project; a Waste Management Plan should be prepared in accordance with ETWB TCW No. 19/2005; a recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed; in order to monitor the disposal of C&D and solid wastes at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be included. One may make 	Work site / during the construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>reference to ETWB TCW No.31/2004 for details;</p> <ul style="list-style-type: none"> the large amount of C&D waste generated is mainly due to the piling works of large diameter piles' excavation at the sea front site. If however marine sediment is found during pile excavation, the handling and disposal of such wastes will be managed in accordance with the requirements of the DASO and the current ETWB Tech. Circular no. 34/2002. 		
Waste	<p><u>Chemical Wastes</u></p> <p>If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i>. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosives, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. For this Project, the amount of chemical wastes produced would be small.</p>	Work site / during the construction period	Δ
<i>Operational Phase</i>			
Waste	<p><u>General Refuse</u></p> <p>Similar to the existing situation, the main waste type generated during the operation stage of the Project will be general refuse generated by the public and staff. These include waste paper, food wrappings and beverage containers. The disposal of future waste arisings generated at the HKCEC would follow the existing handling and disposal arrangement. Provided proper</p>	Work site / during the construction period	Measures not required until commencement of operational phase

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	arrangements are made with licensed contractors to collect the generated waste, adverse waste-related impact is not anticipated during the operation stage. It is expected that there will be a 5-7% increase ratio in the future operations.		
<i>Construction Phase</i>			
Landscape & Visual	Due consideration of appearance and view to 'hide' the construction through careful use of: (a) hoarding design; (b) temporary partition walls; (c) screen for hotels; and (d) temporary footbridge.	Entire works area and adjacent hotels	√
Landscape & Visual	Due consideration to protect existing trees.	Entire works area	√
Landscape & Visual	Due consideration of visual impact from construction activities: (a) construction workers access to reach construction areas without passing through hotels and existing HKCEC; and (b) construction light.	Entire works area	√
<i>Operational Phase</i>			
Landscape & Visual	Sensitive soft and hard landscape design for exposed rooftop garden and shady covered area underneath the Atrium Link Extension. Maximize greening opportunity via various in-situ planting and potted planting to achieve 30% of the roof area as planting area for the project.	Roof top and area underneath the Atrium Link Extension	Mitigation measures to be implemented during operational phase
Landscape & Visual	Sensitive building architecture to visually reduce the bulkiness of the building structure, to visually break down the scale of the facades, and to create rooftops for greening opportunities.	Building of the Atrium Link Extension	Mitigation measures to be implemented during operational phase
Landscape & Visual	Appearance and view considerations: (a) avoid industrial feel of building service elements;	Entire proposed works and adjacent hotels	Mitigation measures to be implemented during operational phase

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	(b) interior visual screens for lower levels of the hotels; (c) consider relocation of facilities of interior spaces of hotels; and (d) careful lighting design at roofs and for building façade to avoid night-time glare.		
Landscape & Visual	Transplanting of trees to adjacent locations.	Convention Avenue	Mitigation measures to be implemented during operational phase
Landscape & Visual	Reinstatement of existing waterfront public footpaths along Convention Avenue and the existing open spaces near Fenwick Street.	Convention Avenue and Fenwick Street	Mitigation measures to be implemented during operational phase

Remark:

- √ Compliance of Mitigation Measures
- <> Compliance of Mitigation but need improvement
- x Non-compliance of Mitigation Measures
- ▲ Non-compliance of Mitigation Measures but rectified by Hip Hing JV
- Δ Deficiency of Mitigation Measures but rectified by Hip Hing JV

24-hour TSP Monitoring Results

24-hour TSP Monitoring Results at Station AM1 (Nearby The Grand Hyatt)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
4 Feb 09 to 5 Feb 09	2.7457	2.9314	1.1441	1.1441	14706.37	14730.37	24.0	113	Sunny	17.8	0.1857	1.1441	1647.50
10 Feb 09 to 11 Feb 09	2.7228	2.9453	1.1441	1.1441	14733.37	14757.37	24.0	135	Sunny	19	0.2225	1.1441	1647.50
16 Feb 09 to 17 Feb 09	2.8219	2.9923	1.0792	1.0792	14760.37	14784.37	24.0	110	Rainy	19	0.1704	1.0792	1554.05
21 Feb 09 to 22 Feb 09	-	-	-	-	-	-	-	-	Sunny	18.2	-	-	-
27 Feb 09 to 28 Feb 09	2.8392	2.9866	1.0792	1.0792	14790.37	14814.37	24.0	95	Sunny	21.1	0.1474	1.0792	1554.05
								Min	95				
								Max	135				
								Average	113				

24-hour TSP Monitoring Results at Station AM2 (Nearby Renaissance Harbour View Hotel)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
4 Feb 09 to 5 Feb 09	2.6805	2.8129	1.3389	1.3389	13034.13	13058.13	24.0	69	Sunny	17.8	0.1324	1.3389	1928.02
10 Feb 09 to 11 Feb 09	2.7333	2.9326	1.3389	1.3389	13061.13	13085.13	24.0	103	Sunny	19	0.1993	1.3389	1928.02
16 Feb 09 to 17 Feb 09	2.8107	2.9645	1.3389	1.3389	13088.13	13113.59	25.5	75	Rainy	19	0.1538	1.3389	2045.30
21 Feb 09 to 22 Feb 09	2.8473	3.1230	1.3389	1.3389	13116.59	13140.59	24.0	143	Sunny	18.2	0.2757	1.3389	1928.02
27 Feb 09 to 28 Feb 09	2.8101	2.9554	1.3732	1.3732	13143.59	13167.59	24.0	73	Sunny	21.1	0.1453	1.3732	1977.41
								Min	69				
								Max	143				
								Average	93				

1-hour TSP Monitoring Results

1-hour TSP Monitoring Results at Station AM-1 (Nearby The Grand Hyatt)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
02 Feb 09	2.7884	2.8016	1.1117	1.1117	14704.37	14705.37	1.00	198	Sunny	18.5	0.0132	1.1117	66.70
04 Feb 09	2.6882	2.7080	1.1441	1.1441	14705.37	14706.37	1.00	288	Sunny	17.8	0.0198	1.1441	68.65
06 Feb 09	2.7204	2.7373	1.1441	1.1441	14730.37	14731.37	1.00	246	Sunny	18.9	0.0169	1.1441	68.65
09 Feb 09	2.7536	2.7625	1.1117	1.1117	14731.37	14732.37	1.00	133	Sunny	20.3	0.0089	1.1117	66.70
10 Feb 09	2.6974	2.7086	1.1117	1.1117	14732.37	14733.37	1.00	168	Sunny	19	0.0112	1.1117	66.70
11 Feb 09	2.7891	2.8043	1.1765	1.1765	14757.37	14758.37	1.00	215	Sunny	19.7	0.0152	1.1765	70.59
13 Feb 09	2.7383	2.7549	1.1117	1.1117	14758.37	14759.37	1.00	249	Sunny	23.4	0.0166	1.1117	66.70
16 Feb 09	2.8168	2.8323	1.1117	1.1117	14759.37	14760.37	1.00	232	Rainy	19	0.0155	1.1117	66.70
18 Feb 09	2.8066	2.8220	1.1441	1.1441	14784.37	14785.37	1.00	224	Sunny	18.9	0.0154	1.1441	68.65
20 Feb 09	2.8180	2.8333	1.0792	1.0792	14785.37	14786.37	1.00	236	Sunny	21.1	0.0153	1.0792	64.75
21 Feb 09	2.8254	2.8434	1.0792	1.0792	14786.37	14787.37	1.00	278	Sunny	18.2	0.0180	1.0792	64.75
27 Feb 09	2.8015	2.8167	1.0468	1.0468	14787.37	14788.37	1.00	242	Sunny	21.1	0.0152	1.0468	62.81
27 Feb 09	2.7959	2.8094	1.0135	1.0135	14788.37	14789.37	1.00	222	Sunny	21.1	0.0135	1.0135	60.81
27 Feb 09	2.8143	2.8268	1.0144	1.0144	14789.37	14790.37	1.00	205	Sunny	21.1	0.0125	1.0144	60.86

Min	133
Max	288
Average	224

1-hour TSP Monitoring Results at Station AM-2 (Nearby Renaissance Harbour View Hotel)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
02 Feb 09	2.7588	2.7719	1.3389	1.3389	13032.13	13033.13	1.00	163	Sunny	18.5	0.0131	1.3389	80.33
04 Feb 09	2.7045	2.7248	1.3389	1.3389	13033.13	13034.13	1.00	253	Sunny	17.8	0.0203	1.3389	80.33
06 Feb 09	2.7063	2.7199	1.3389	1.3389	13058.13	13059.13	1.00	169	Sunny	18.9	0.0136	1.3389	80.33
09 Feb 09	2.7427	2.7496	1.3046	1.3046	13059.13	13060.13	1.00	88	Sunny	20.3	0.0069	1.3046	78.28
10 Feb 09	2.6983	2.7103	1.3046	1.3046	13060.13	13061.13	1.00	153	Sunny	19	0.0120	1.3046	78.28
11 Feb 09	2.8011	2.8129	1.3046	1.3046	13085.13	13086.13	1.00	151	Sunny	19.7	0.0118	1.3046	78.28
13 Feb 09	2.7088	2.7238	1.3046	1.3046	13086.13	13087.13	1.00	192	Sunny	23.4	0.0150	1.3046	78.28
16 Feb 09	2.8389	2.8494	1.2360	1.2360	13087.13	13088.13	1.00	142	Rainy	19	0.0105	1.2360	74.16
18 Feb 09	2.8038	2.8159	1.2703	1.2703	13113.59	13114.59	1.00	159	Sunny	18.9	0.0121	1.2703	76.22
20 Feb 09	2.7916	2.8035	1.2703	1.2703	13114.59	13115.59	1.00	156	Sunny	21.1	0.0119	1.2703	76.22
21 Feb 09	2.8362	2.8528	1.2703	1.2703	13115.59	13116.59	1.00	218	Sunny	18.2	0.0166	1.2703	76.22
23 Feb 09	2.8553	2.8739	1.2703	1.2703	13140.59	13141.59	1.00	244	Sunny	22.5	0.0186	1.2702	76.21
25 Feb 09	2.8509	2.8656	1.3389	1.3389	13141.59	13142.59	1.00	183	Sunny	23.6	0.0147	1.3389	80.33
27 Feb 09	2.8118	2.8265	1.3046	1.3046	13142.59	13143.59	1.00	188	Sunny	21.1	0.0147	1.3046	78.28

Min	88
Max	253
Average	176

Meteorological Data Extracted from King's Park Stations of the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Wind Direction (Degree)	Average Wind Speed (km/h)
02 Feb 09	Sunny	18.5	67	0.0	110	9.3
04 Feb 09	Sunny	17.8	79	0.0	100	11.6
06 Feb 09	Sunny	18.9	78	0.0	100	12.2
09 Feb 09	Sunny	20.3	73	0.0	110	6.7
10 Feb 09	Sunny	19	82	0.0	110	9.3
11 Feb 09	Sunny	19.7	80	0.0	100	6.1
13 Feb 09	Sunny	23.4	83	0.0	210	6.7
16 Feb 09	Rainy	19	94	0.5	100	13.2
18 Feb 09	Sunny	18.9	77	0.0	100	12.7
20 Feb 09	Sunny	21.1	75	0.0	10	5.7
21 Feb 09	Sunny	18.2	81	0.0	100	17.2
23 Feb 09	Sunny	22.5	90	0.0	100	10.1
25 Feb 09	Sunny	23.6	83	0.0	110	8.6
27 Feb 09	Sunny	21.1	87	0.0	100	11.1

Notes:

- missing (less than 24 hourly observations a day)

NA - not available

Figure G1 - Measured 24-hour TSP Concentration ($\mu\text{g}\text{m}^{-3}$) at AM1

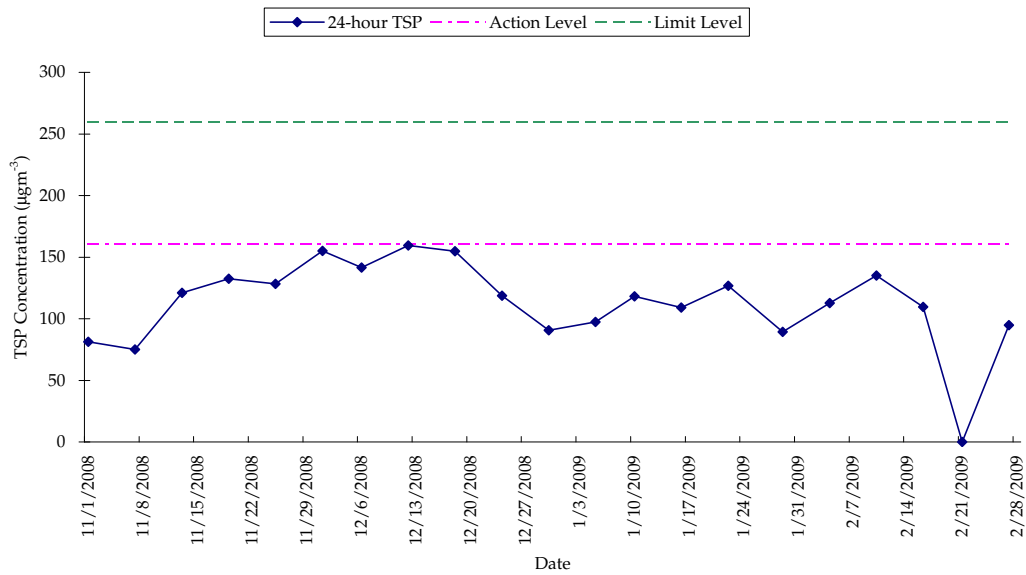
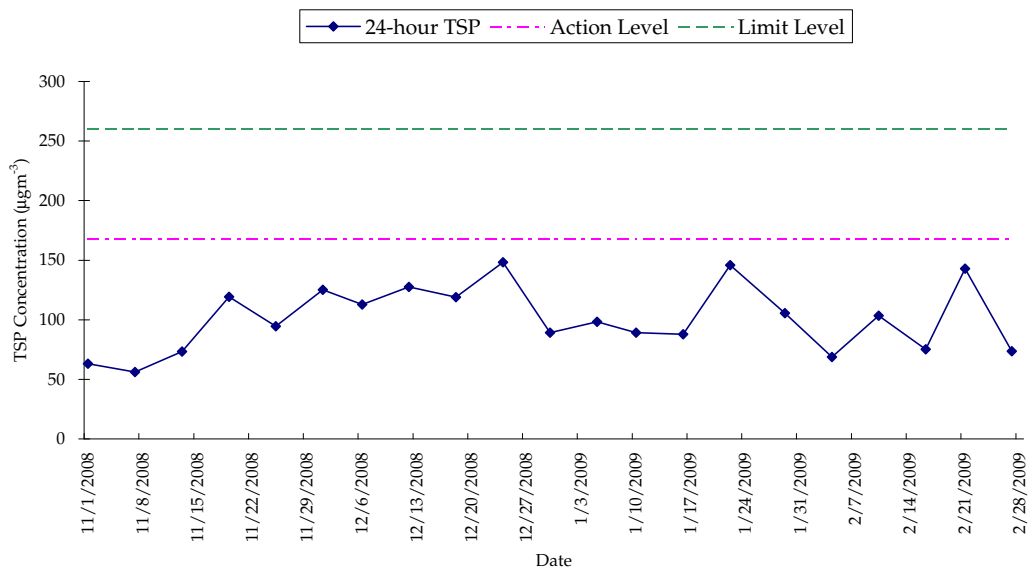
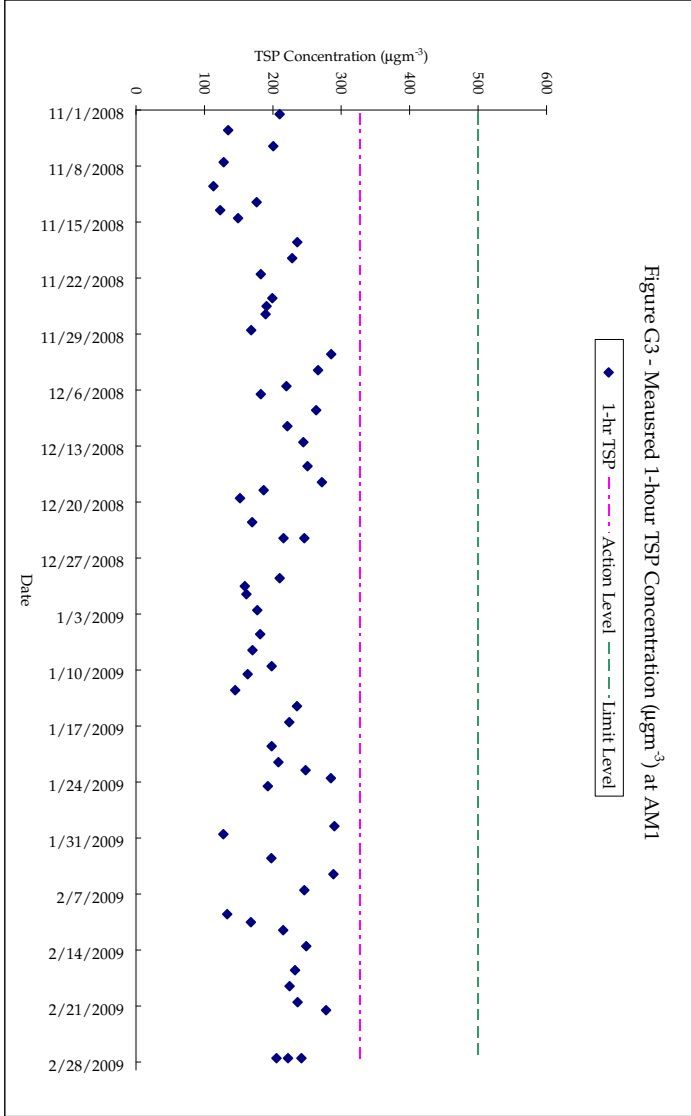
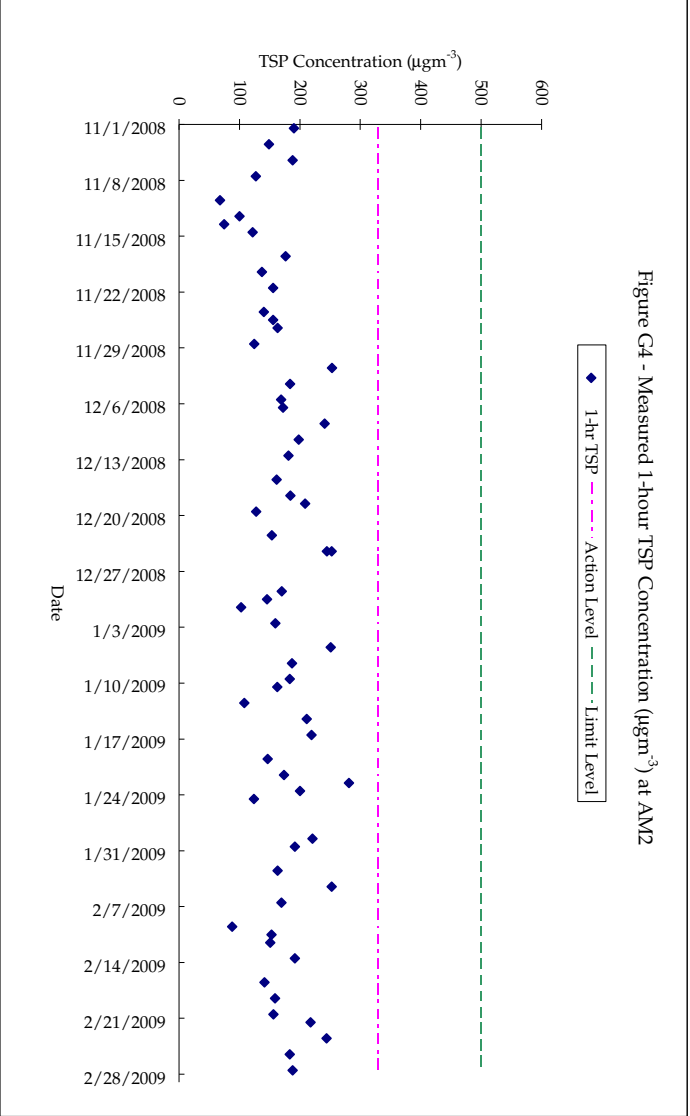


Figure G2 - Measured 24-hour TSP Concentration ($\mu\text{g}\text{m}^{-3}$) at AM2





24-hour TSP Monitoring Results

24-hour TSP Monitoring Results at Station AM1 (Nearby The Grand Hyatt)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
5/3/2009 to 6/3/2009	2.8174	2.8981	1.0651	1.0651	14817.37	14841.37	24.0	53	Rainy	19.1	0.0807	1.0651	1533.74
11/3/2009 to 12/3/2009	2.7726	2.9465	1.1305	1.1305	14844.37	14868.37	24.0	107	Sunny	18.7	0.1739	1.1305	1627.92
17/3/2009 to 18/3/2009	2.8667	3.0370	1.1633	1.1633	14871.37	14895.37	24.0	102	Sunny	21.3	0.1703	1.1633	1675.15
23/3/2009 to 24/3/2009	2.7870	2.9974	1.1960	1.1960	14898.37	14922.37	24.0	122	Sunny	23.4	0.2104	1.1960	1722.24
28/3/2009 to 29/3/2009	2.7956	2.9002	1.1305	1.1305	14925.37	14949.37	24.0	64	Rainy	20.7	0.1046	1.1305	1627.92
								Min	53				
								Max	122				
								Average	90				

24-hour TSP Monitoring Results at Station AM2 (Nearby Renaissance Harbour View Hotel)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
5/3/2009 to 6/3/2009	2.8367	2.9445	1.3133	1.3133	13170.59	13194.59	24.0	57	Rainy	19.1	0.1078	1.3133	1891.15
11/3/2009 to 12/3/2009	2.7822	2.9686	1.3133	1.3133	13197.56	13221.60	24.0	98	Sunny	18.7	0.1864	1.3133	1894.30
17/3/2009 to 18/3/2009	2.8055	2.9633	1.3133	1.3133	13224.60	13248.60	24.0	83	Sunny	21.3	0.1578	1.3133	1891.15
23/3/2009 to 24/3/2009	2.7794	2.9821	1.3133	1.3133	13251.60	13275.60	24.0	107	Sunny	23.4	0.2027	1.3133	1891.15
28/3/2009 to 29/3/2009	2.7931	2.8910	1.3133	1.3133	13278.60	13302.60	24.0	52	Rainy	20.7	0.0979	1.3133	1891.15
								Min	52				
								Max	107				
								Average	80				

1-hour TSP Monitoring Results

1-hour TSP Monitoring Results at Station AM1 (Nearby The Grand Hyatt)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
02 Mar 09	2.7924	2.8046	1.0468	1.0468	14814.37	14815.37	1.00	194	Sunny	18.3	0.0122	1.0468	62.81
04 Mar 09	2.8505	2.8632	1.0323	1.0323	14815.37	14816.37	1.00	205	Rainy	17.8	0.0127	1.0323	61.94
05 Mar 09	2.8422	2.8503	0.9996	0.9996	14816.37	14817.37	1.00	135	Rainy	19.1	0.0081	0.9996	59.98
06 Mar 09	2.8110	2.8230	1.0651	1.0651	14841.37	14842.37	1.00	188	Rainy	16.5	0.0120	1.0651	63.91
09 Mar 09	2.8052	2.8151	1.0323	1.0323	14842.37	14843.37	1.00	160	Sunny	17	0.0099	1.0323	61.94
11 Mar 09	2.8421	2.8518	1.0323	1.0323	14843.37	14844.37	1.00	157	Sunny	18.7	0.0097	1.0323	61.94
13 Mar 09	2.8532	2.8699	1.0978	1.0978	14868.37	14869.37	1.00	254	Sunny	20.1	0.0167	1.0978	65.87
16 Mar 09	2.8813	2.8929	1.0651	1.0651	14869.37	14870.37	1.00	182	Sunny	20.1	0.0116	1.0651	63.91
17 Mar 09	2.8107	2.8275	1.0323	1.0323	14870.37	14871.37	1.00	271	Sunny	21.3	0.0168	1.0323	61.94
18 Mar 09	2.8137	2.8234	1.1305	1.1305	14895.37	14896.37	1.00	143	Sunny	22	0.0097	1.1305	67.83
20 Mar 09	2.8286	2.8405	1.0651	1.0651	14896.37	14897.37	1.00	186	Sunny	23.7	0.0119	1.0651	63.91
23 Mar 09	2.8062	2.8168	1.0651	1.0651	14897.37	14898.37	1.00	166	Sunny	23.4	0.0106	1.0651	63.91
25 Mar 09	2.7768	2.7949	1.0651	1.0651	14922.37	14923.37	1.00	283	Rainy	18	0.0181	1.0651	63.91
27 Mar 09	2.8022	2.8200	1.0651	1.0651	14923.37	14924.37	1.00	279	Rainy	19.2	0.0178	1.0651	63.91
28 Mar 09	2.7787	2.7902	1.0651	1.0651	14924.37	14925.37	1.00	180	Rainy	20.7	0.0115	1.0651	63.91
30 Mar 09	2.7605	2.7699	1.0651	1.0651	14949.37	14950.37	1.00	147	Sunny	18.8	0.0094	1.0651	63.91
								Min	135				
								Max	283				
								Average	196				

1-hour TSP Monitoring Results at Station AM2 (Nearby Renaissance Harbour View Hotel)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
02 Mar 09	2.8136	2.8233	1.3389	1.3389	13167.59	13168.59	1.00	121	Sunny	18.3	0.0097	1.3389	80.33
04 Mar 09	2.8432	2.8628	1.2793	1.2793	13168.59	13169.59	1.00	255	Rainy	17.8	0.0196	1.2793	76.76
05 Mar 09	2.8385	2.8504	1.2793	1.2793	13169.59	13170.59	1.00	155	Rainy	19.1	0.0119	1.2793	76.76
06 Mar 09	2.8232	2.8386	1.3133	1.3133	13194.59	13195.59	1.00	195	Rainy	16.5	0.0154	1.3133	78.80
09 Mar 09	2.8143	2.8309	1.2793	1.2793	13195.59	13196.59	1.00	216	Sunny	17	0.0166	1.2793	76.76
11 Mar 09	2.8383	2.8489	1.2793	1.2793	13196.59	13197.56	0.97	142	Sunny	18.7	0.0106	1.2793	74.46
13 Mar 09	2.8913	2.9083	1.2793	1.2793	13221.60	13222.60	1.00	221	Sunny	20.1	0.0170	1.2793	76.76
16 Mar 09	2.8680	2.8862	1.2452	1.2452	13222.60	13223.60	1.00	244	Sunny	20.1	0.0182	1.2452	74.71
17 Mar 09	2.8149	2.8345	1.2452	1.2452	13223.60	13224.60	1.00	262	Sunny	21.3	0.0196	1.2452	74.71
18 Mar 09	2.8049	2.8166	1.2793	1.2793	13248.60	13249.60	1.00	152	Sunny	22	0.0117	1.2793	76.76
20 Mar 09	2.8149	2.8314	1.2452	1.2452	13249.60	13250.60	1.00	221	Sunny	23.7	0.0165	1.2452	74.71
23 Mar 09	2.8114	2.8281	1.2111	1.2111	13250.60	13251.60	1.00	230	Sunny	23.4	0.0167	1.2111	72.67
25 Mar 09	2.7772	2.7906	1.2793	1.2793	13275.60	13276.60	1.00	175	Rainy	18	0.0134	1.2793	76.76
27 Mar 09	2.7699	2.7908	1.2793	1.2793	13276.60	13277.60	1.00	272	Rainy	19.2	0.0209	1.2793	76.76
28 Mar 09	2.7720	2.7864	1.2793	1.2793	13277.60	13278.60	1.00	188	Rainy	20.7	0.0144	1.2793	76.76
30 Mar 09	2.7708	2.7802	1.3474	1.3474	13302.60	13303.60	1.00	116	Sunny	18.8	0.0094	1.3474	80.84
								Min	116				
								Max	272				
								Average	198				

Meteorological Data Extracted from King's Park Stations of the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Wind Direction (Degree)	Average Wind Speed (km/h)
02 Mar 09	Sunny	18.3	79	0.0	100	8.7
04 Mar 09	Rainy	17.8	90	1.0	100	15.1
05 Mar 09	Rainy	19.1	96	40.5	100	9.5
06 Mar 09	Rainy	16.5	88	13.5	20	5.9
09 Mar 09	Sunny	17	73	0.5	10	5.4
11 Mar 09	Sunny	18.7	84	0.0	100	17.6
13 Mar 09	Sunny	20.1	83	0.0	110	9.7
16 Mar 09	Sunny	20.1	73	0.0	110	6.1
17 Mar 09	Sunny	21.3	80	0.0	100	4.8
18 Mar 09	Sunny	22	85	0.0	100#	3.6#
20 Mar 09	Sunny	23.7	85	0.0	270	4.9
23 Mar 09	Sunny	23.4	92	0.0	110	8.6
25 Mar 09	Rainy	18	89	32.5	100	9.7
27 Mar 09	Rainy	19.2	94	6.5	110	13.2
28 Mar 09	Rainy	20.7	95	0.5	110	13.0
30 Mar 09	Sunny	18.8	79	0.0	100	12.0

- missing (less than 24 hourly observations a day)

NA - not available

Figure G1 - Measured 24-hour TSP Concentration (μgm^{-3}) at AM1

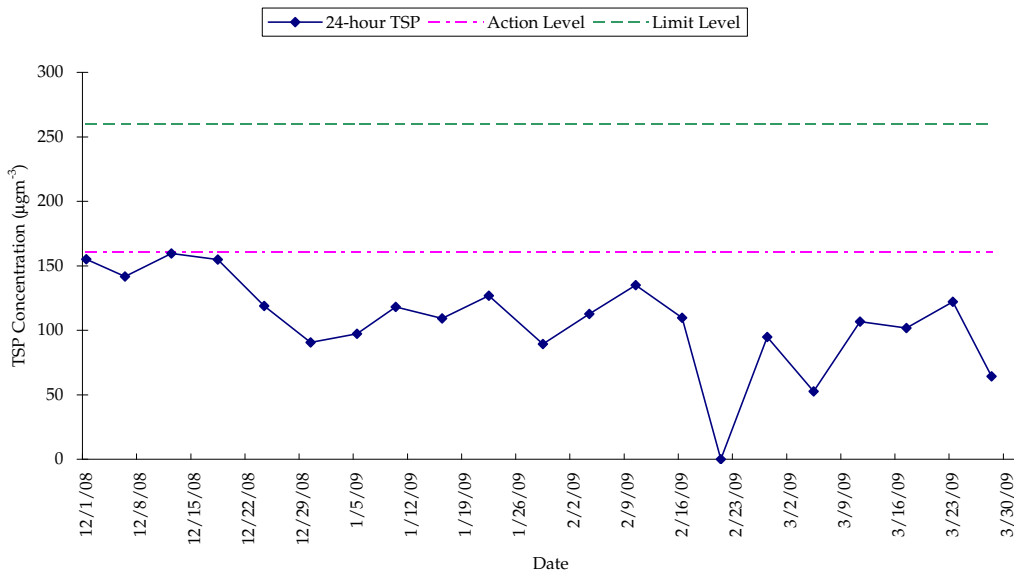
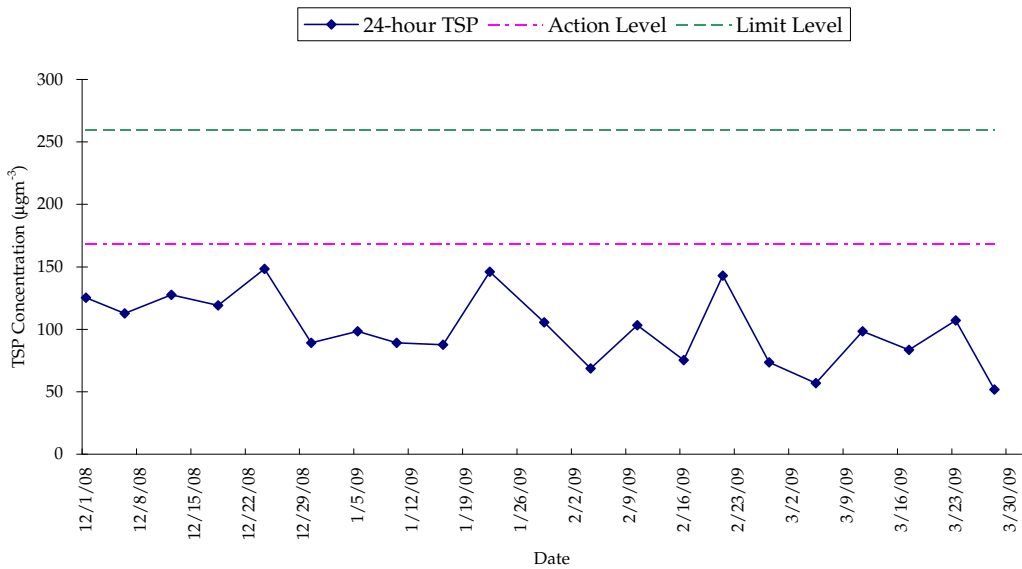
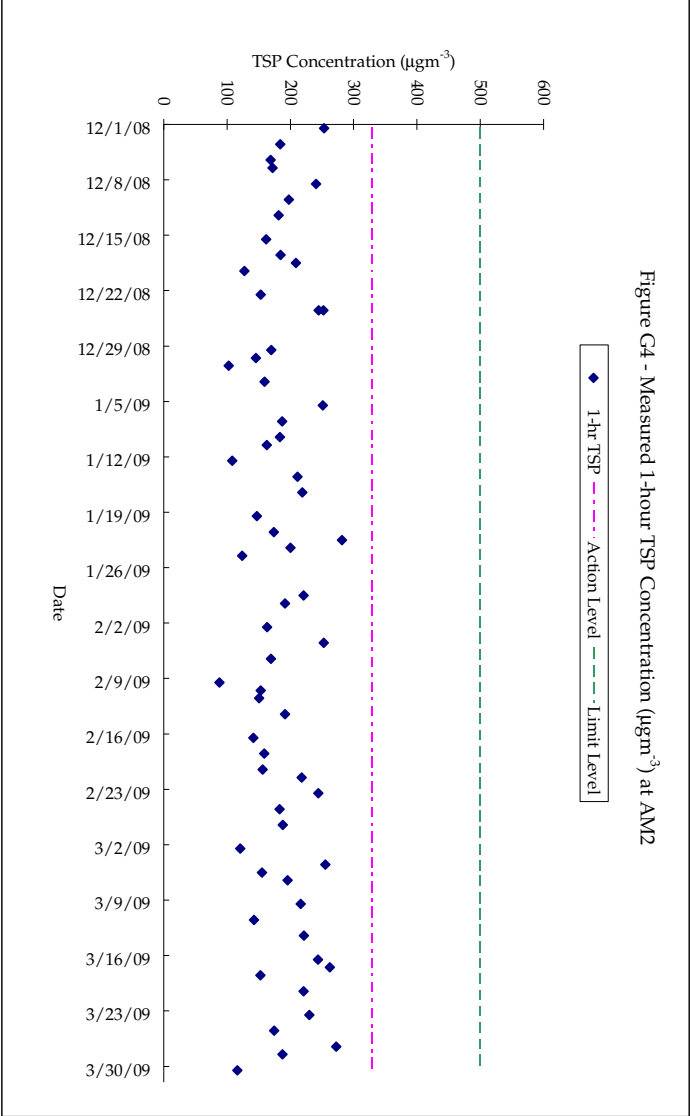
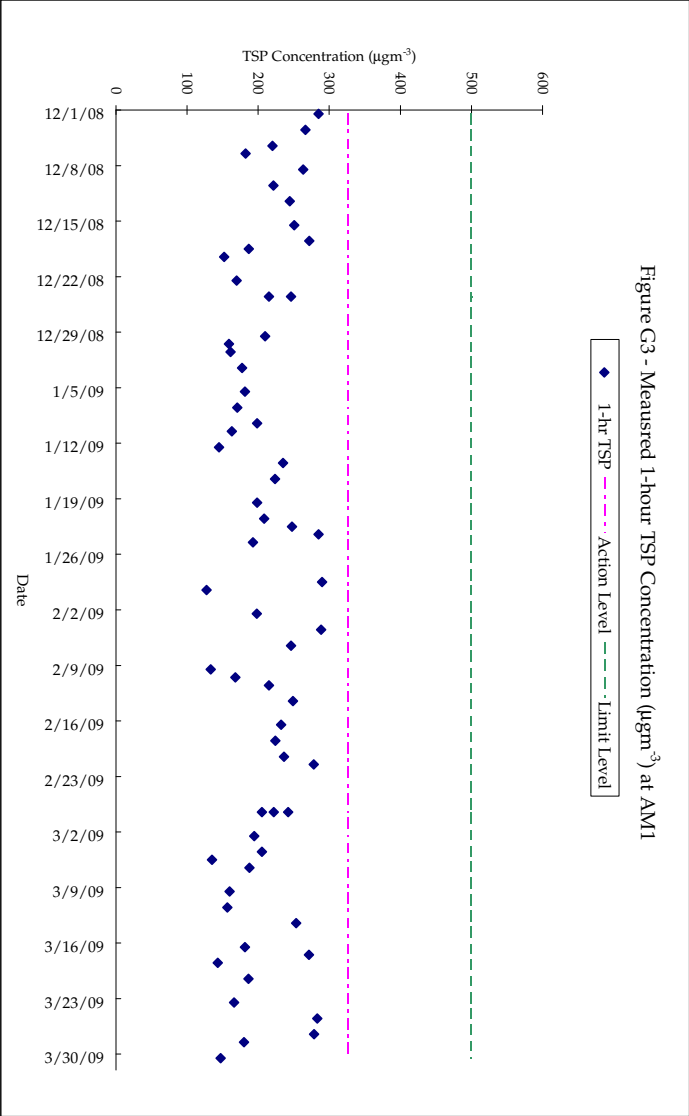


Figure G2 - Measured 24-hour TSP Concentration (μgm^{-3}) at AM2





24-hour TSP Monitoring Results

24-hour TSP Monitoring Results at Station AM1 (Nearby The Grand Hyatt)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
3/4/2009 to 4/4/2009	2.8053	2.9347	1.0978	1.0978	14952.37	14976.37	24.0	82	Sunny	18	0.1294	1.0978	1580.83
9/4/2009 to 10/4/2009	2.7844	2.9430	1.1633	1.1633	14980.37	15004.37	24.0	95	Sunny	21	0.1586	1.1633	1675.15
15/4/2009 to 16/4/2009	2.8141	2.9047	1.1960	1.1960	15006.37	15029.38	23.0	55	Rainy	22.6#	0.0906	1.1960	1651.20
21/4/2009 to 22/4/2009	2.7685	2.9330	1.2614	1.2614	15032.38	15056.38	24.0	91	Rainy	26	0.1645	1.2614	1816.42
27/4/2009 to 28/4/2009	2.7631	2.9689	1.2287	1.2287	15058.38	15082.38	24.0	116	Sunny	21	0.2058	1.2287	1769.33
30/4/2009 to 1/5/2009	2.7905	2.9423	1.2287	1.2287	15085.38	15109.38	24.0	86	Sunny	22	0.1518	1.2287	1769.33
								Min	55				
								Max	116				
								Average	87				

24-hour TSP Monitoring Results at Station AM2 (Nearby Renaissance Harbour View Hotel)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
3/4/2009 to 4/4/2009	2.7669	2.9043	1.2793	1.2793	13305.60	13329.60	24.0	75	Sunny	18	0.1374	1.2793	1842.19
9/4/2009 to 10/4/2009	2.8066	2.9578	1.3474	1.3474	13333.60	13357.60	24.0	78	Sunny	21	0.1512	1.3474	1940.26
15/4/2009 to 16/4/2009	2.8041	2.9076	1.3133	1.3133	13359.60	13383.60	24.0	55	Rainy	22.6#	0.1035	1.3133	1891.15
21/4/2009 to 22/4/2009	2.7962	2.9306	1.3133	1.3133	13386.60	13410.60	24.0	71	Rainy	26	0.1344	1.3133	1891.15
27/4/2009 to 28/4/2009	2.7915	3.0449	1.3133	1.3133	13413.60	13437.59	24.0	134	Sunny	21	0.2534	1.3133	1890.36
30/4/2009 to 1/5/2009	2.7974	2.9503	1.3474	1.3474	13440.60	13464.60	24.0	79	Sunny	22	0.1529	1.3474	1940.26
								Min	55				
								Max	134				
								Average	82				

1-hour TSP Monitoring Results

1-hour TSP Monitoring Results at Station AM1 (Nearby The Grand Hyatt)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
01 Apr 09	2.7730	2.7867	1.0651	1.0651	14950.37	14951.37	1.00	214	Sunny	20	0.0137	1.0651	63.91
03 Apr 09	2.7814	2.7934	1.0651	1.0651	14951.37	14952.37	1.00	188	Sunny	18	0.0120	1.0651	63.91
06 Apr 09	2.8033	2.8197	1.0978	1.0978	14976.37	14977.37	1.00	249	Rainy	18	0.0164	1.0978	65.87
08 Apr 09	2.7847	2.7925	1.0651	1.0651	14977.37	14978.37	1.00	122	Sunny	20	0.0078	1.0651	63.91
09 Apr 09	2.7670	2.7753	1.0978	1.0978	14978.37	14979.37	1.00	126	Sunny	21	0.0083	1.0978	65.87
09 Apr 09	2.8043	2.8166	1.1960	1.1960	14979.37	14980.37	1.00	171	Sunny	21	0.0123	1.1960	71.76
14 Apr 09	2.7668	2.7757	1.1305	1.1305	15004.37	15005.37	1.00	131	Sunny	25	0.0089	1.1305	67.83
15 Apr 09	2.8099	2.8204	1.1633	1.1633	15005.37	15006.37	1.00	150	Rainy	22.6#	0.0105	1.1633	69.80
17 Apr 09	2.7991	2.8083	1.1633	1.1633	15029.38	15030.38	1.00	132	Sunny	NA	0.0092	1.1633	69.80
20 Apr 09	2.7850	2.7979	1.1633	1.1633	15030.38	15031.38	1.00	185	Sunny	28.3#	0.0129	1.1633	69.80
21 Apr 09	2.7534	2.7654	1.1633	1.1633	15031.38	15032.38	1.00	172	Rainy	26	0.0120	1.1633	69.80
22 Apr 09	2.7408	2.7523	1.2287	1.2287	15056.38	15057.38	1.00	156	Sunny	21.9#	0.0115	1.2287	73.72
24 Apr 09	2.7694	2.7782	1.1305	1.1305	15057.38	15058.38	1.00	130	Sunny	23	0.0088	1.1305	67.83
29 Apr 09	2.7929	2.8052	1.0978	1.0978	15082.38	15083.38	1.00	187	Sunny	22	0.0123	1.0978	65.87
30 Apr 09	2.7920	2.8005	1.0978	1.0978	15083.38	15084.38	1.00	129	Sunny	22	0.0085	1.0978	65.87
30 Apr 09	2.7937	2.8003	1.1305	1.1305	15084.38	15085.38	1.00	97	Sunny	22	0.0066	1.1305	67.83
								Min	97				
								Max	249				
								Average	159				

1-hour TSP Monitoring Results at Station AM2 (Nearby Renaissance Harbour View Hotel)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Weather Condition	Ave. Air Temp. (°C)	Particulate weight(g)	Av. flow (m ³ /min)	Total vol. (m ³)
	Initial	Final	Initial	Final	Initial	Final							
01 Apr 09	2.8026	2.8121	1.1771	1.1771	13303.60	13304.60	1.00	135	Sunny	20	0.0095	1.1771	70.63
03 Apr 09	2.7891	2.8016	1.2111	1.2111	13304.60	13305.60	1.00	172	Sunny	18	0.0125	1.2111	72.67
06 Apr 09	2.7879	2.8064	1.2793	1.2793	13329.60	13330.60	1.00	241	Rainy	18	0.0185	1.2793	76.76
08 Apr 09	2.7552	2.7685	1.2452	1.2452	13330.60	13331.60	1.00	178	Sunny	20	0.0133	1.2452	74.71
09 Apr 09	2.7126	2.7208	1.3474	1.3474	13331.60	13332.60	1.00	101	Sunny	21	0.0082	1.3474	80.84
09 Apr 09	2.7747	2.7821	1.3474	1.3474	13332.60	13333.60	1.00	92	Sunny	21	0.0074	1.3474	80.84
14 Apr 09	2.8045	2.8169	1.2452	1.2452	13357.60	13358.60	1.00	166	Sunny	25	0.0124	1.2452	74.71
15 Apr 09	2.7605	2.7689	1.2793	1.2793	13358.60	13359.60	1.00	109	Rainy	22.6#	0.0084	1.2793	76.76
17 Apr 09	2.8008	2.8068	1.2793	1.2793	13383.60	13384.60	1.00	78	Sunny	NA	0.0060	1.2793	76.76
20 Apr 09	2.7888	2.8009	1.2111	1.2111	13384.60	13385.60	1.00	167	Sunny	28.3#	0.0121	1.2111	72.67
21 Apr 09	2.7669	2.7742	1.2793	1.2793	13385.60	13386.60	1.00	95	Rainy	26	0.0073	1.2793	76.76
22 Apr 09	2.7652	2.7758	1.3133	1.3133	13410.60	13411.60	1.00	135	Sunny	21.9#	0.0106	1.3133	78.80
24 Apr 09	2.7615	2.7752	1.2793	1.2793	13411.60	13412.60	1.00	178	Sunny	23	0.0137	1.2793	76.76
27 Apr 09	2.7735	2.7879	1.2452	1.2452	13412.60	13413.60	1.00	193	Sunny	21	0.0144	1.2452	74.71
29 Apr 09	2.7582	2.7667	1.3133	1.3133	13437.59	13438.59	1.00	108	Sunny	22	0.0085	1.3133	78.80
30 Apr 09	2.7806	2.7877	1.3133	1.3133	13438.59	13439.60	1.01	89	Sunny	22	0.0071	1.3133	79.59
30 Apr 09	2.8041	2.8088	1.2793	1.2793	13439.60	13440.60	1.00	61	Sunny	22	0.0047	1.2793	76.76
								Min	61				
								Max	241				
								Average	135				

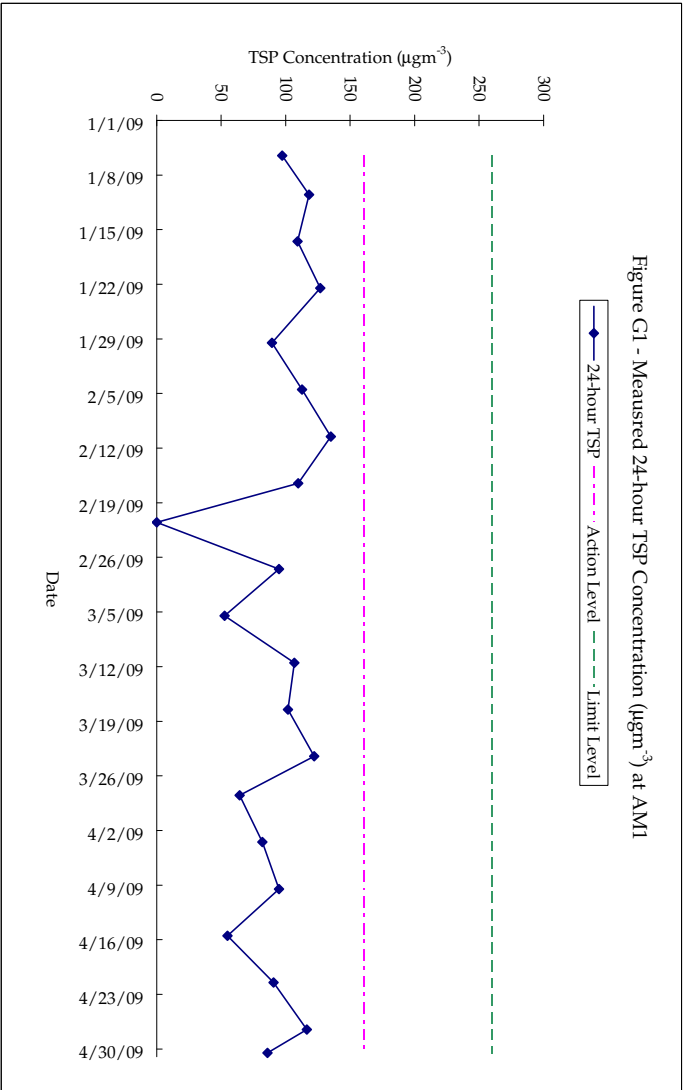
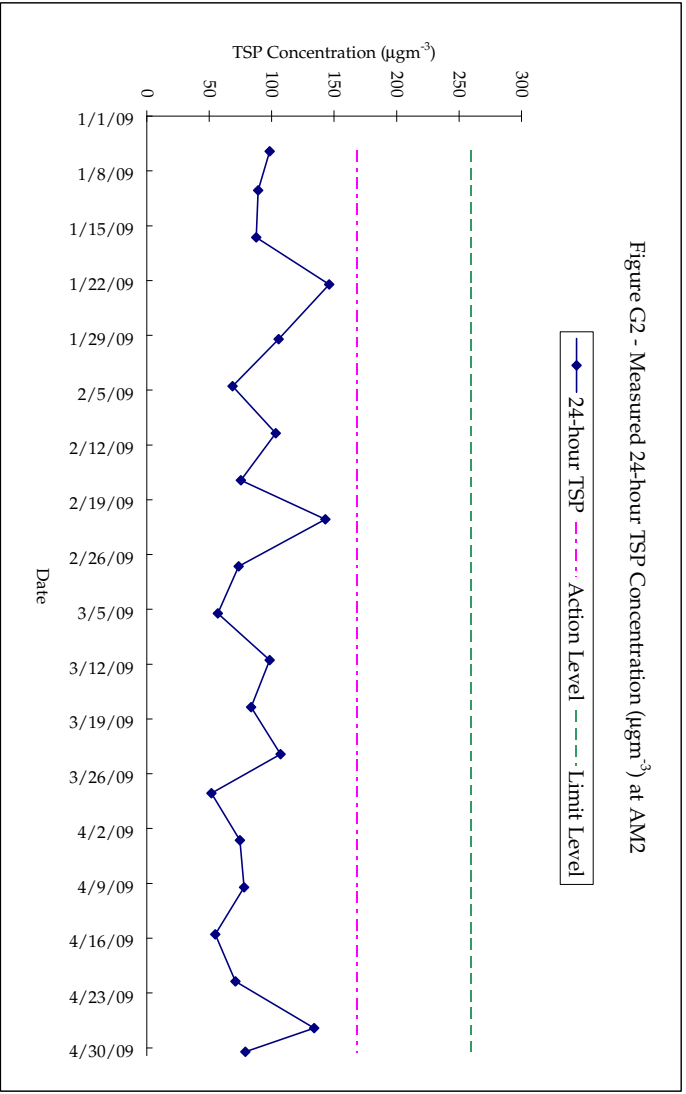
Meteorological Data Extracted from King's Park Stations of the Hong Kong Observatory

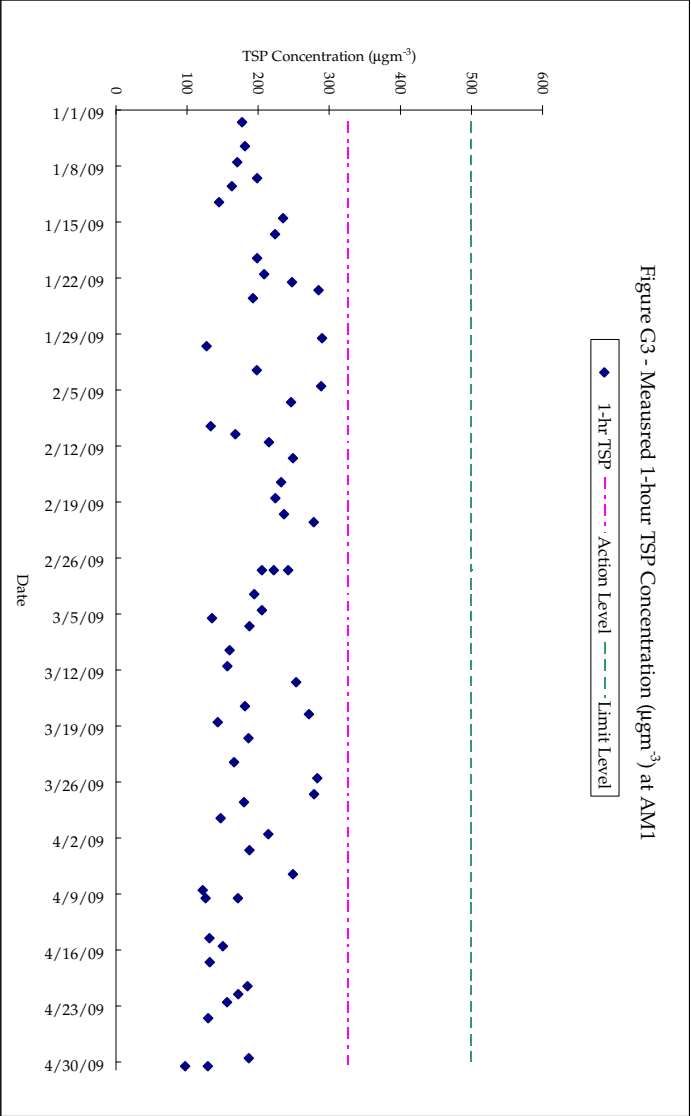
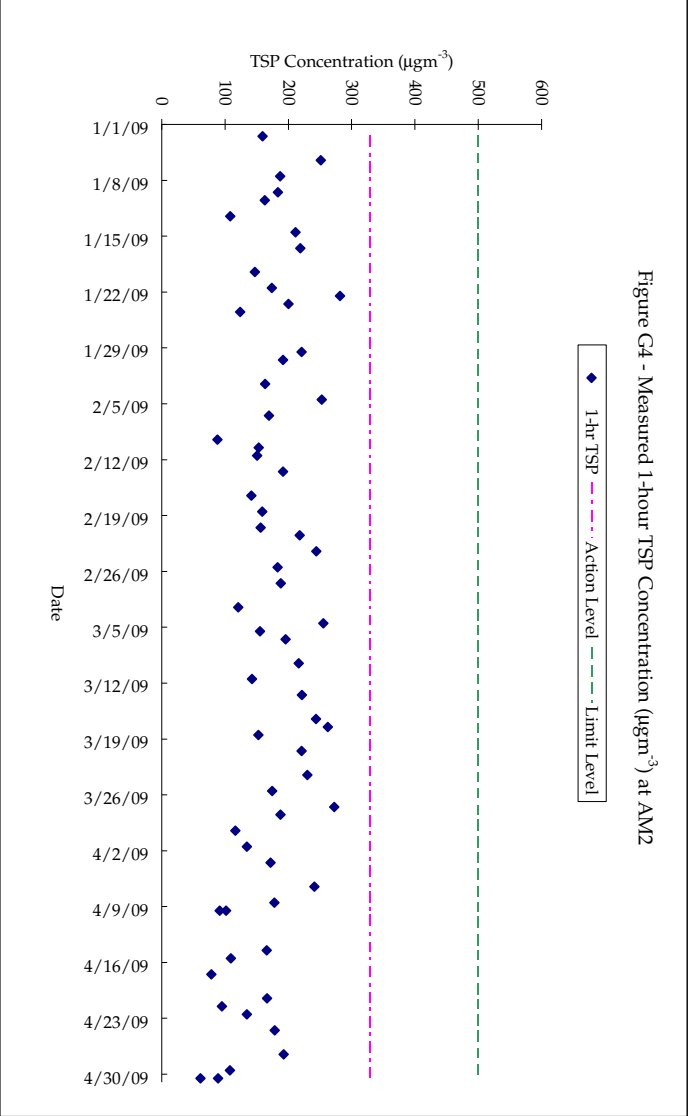
Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Wind Direction (Degree)	Average Wind Speed (km/h)
01 Apr 09	Sunny	19.6	65	0.0	100	13.6
03 Apr 09	Sunny	18.3	79	0.0	100#	16.6#
06 Apr 09	Rainy	18.4	82	7.0	100	9.5
08 Apr 09	Sunny	20.3	74	0.0	110	10.8
09 Apr 09	Sunny	20.5	53	0.0	100	17.6
09 Apr 09	Sunny	20.5	53	0.0	100	17.6
14 Apr 09	Sunny	24.7	80	0.0	100#	5.0#
15 Apr 09	Rainy	22.6#	83#	4.5	100#	13.9#
17 Apr 09	Sunny	NA	NA	NA	NA	NA
20 Apr 09	Sunny	28.3#	62#	0.0#	270#	8.2#
21 Apr 09	Rainy	25.6	61	0.5	100	13.7
22 Apr 09	Sunny	21.9#	77#	0.0	110#	17.8#
24 Apr 09	Sunny	22.5	91	0.0	110	13.4
27 Apr 09	Sunny	20.8	67	0.0	100#	14.4#
29 Apr 09	Sunny	21.5	67	0.0	110	14.1
30 Apr 09	Sunny	22.3	68	0.0	110	14.6

Notes:

- missing (less than 24 hourly observations a day)

NA - not available





Annex G

Water Quality Monitoring Results

Water Quality Monitoring Results for Station 3

Date	4/20/2009			4/20/2009			4/22/2009			4/22/2009			4/24/2009			4/24/2009			4/27/2009			4/27/2009			4/29/2009			4/29/2009		
Time (hh:mm)	09:00 - 09:12			14:08 - 14:20			10:00 - 10:15			16:23 - 16:36			11:00 - 11:17			17:30 - 17:46			7:00 - 7:15			13:00 - 13:15			7:50 - 8:03			13:45 - 13:57		
Ambient Temperature	28			30			24			24			24			23			22			23			23			27		
Weather	Drizzle			Cloudy			Cloudy			Cloudy			Cloudy			Cloudy			Cloudy			Cloudy			Fine			Fine		
Water Depth (m)	10.20			8.60			8.60			9.10			9.00			9.30			9.20			9.80			9.80			8.40		
Monitoring Depth	7.50			7.50			7.50			7.50			7.50			7.50			7.50			7.50			7.50			7.50		
Tide	Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood		
Trial	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average
Water Temperature (°C)	24.2	24.3	24.3	26.6	26.8	26.7	23.1	23.0	23.1	23.3	23.4	23.4	22.9	22.9	22.9	22.8	22.6	22.7	21.7	21.6	21.7	22.3	22.2	22.3	23.8	24.1	24.0	25.8	25.8	25.8
Salinity (ppt)	30.8	30.8	30.8	31.0	30.9	31.0	29.8	29.8	29.8	31.0	30.9	31.0	30.1	30.2	30.2	29.5	29.4	29.5	29.4	29.5	29.5	29.7	29.6	29.7	30.2	30.1	30.2	30.5	30.4	30.5
D.O. (mg/L)	3.29	3.55	3.4	4.12	4.07	4.1	3.85	3.80	3.8	3.63	3.57	3.6	3.90	3.87	3.9	3.79	3.80	3.8	3.54	3.58	3.6	3.44	3.49	3.5	4.30	4.25	4.3	4.11	4.10	4.1
D.O. Saturation (%)	47.2	50.6	48.9	59.1	58.2	58.7	54.6	53.9	54.3	51.5	50.6	51.1	54.7	54.5	54.6	52.8	52.9	52.9	50.9	51.5	51.2	49.5	50.2	49.9	60.6	59.9	60.3	58.0	57.8	57.9
Turbidity (NTU)	4.09	4.01	4.1	3.67	3.80	3.7	5.20	0.15	2.7	4.12	4.16	4.1	3.95	3.94	3.9	3.80	3.81	3.8	4.50	4.55	4.5	4.77	4.72	4.7	3.85	3.85	3.9	3.77	3.80	3.8
SS* (mg/L)	4.3	4.3	4.3	4.0	4.3	4.2	5.5	5.5	5.5	4.5	4.5	4.5	4.3	4.3	4.3	4.0	4.0	4.0	5.0	5.0	5.0	5.3	5.3	5.3	4.0	4.0	4.0	4.0	4.0	4.0
Remarks	General Earth Work			General Earth Work			Lifting works			Welding works						No construction activities were observed.			General Earth Works			General earth work			General earth work					

* For the values of suspended solids less than 5mg/L (PQL), the results are for reference only. PQL stands for practical quantitation Limit, or lowest reporting limit, which is estimated from the method detection limit (MDL). Normally PQL is about 5 times the MDL.

Within Action Level ?

Date	4/20/2009		4/20/2009		4/22/2009		4/22/2009		4/24/2009		4/24/2009		4/27/2009		4/27/2009		4/29/2009		4/29/2009	
D.O. (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Turbidity (NTU)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SS (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Within Limit Level ?

Date	4/20/2009		4/20/2009		4/22/2009		4/22/2009		4/24/2009		4/24/2009		4/27/2009		4/27/2009		4/29/2009		4/29/2009	
D.O. (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Turbidity (NTU)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SS (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Water Quality Monitoring Results for Station 4

Date	4/20/2009			4/20/2009			4/22/2009			4/22/2009			4/24/2009			4/24/2009			4/27/2009			4/27/2009			4/29/2009			4/29/2009		
Time (hh:mm)	9:18 - 09:30			13:47 - 14:00			10:20 - 10:33			16:05 - 16:18			11:25 - 11:39			17:53 - 18:06			7:28 - 7:40			13:29 - 13:40			8:10 - 8:25			14:02 - 14:15		
Ambient Temperature	28			30			24			24			24			23			22			23			23			27		
Weather	Drizzle			Cloudy			Cloudy			Cloudy			Cloudy			Cloudy			Cloudy			Cloudy			Fine			Fine		
Water Depth (m)	4.40			3.00			3.20			3.80			3.80			4.00			4.20			4.60			5.00			3.60		
Monitoring Depth	5.00			5.00			5.00			5.00			5.00			5.00			5.00			5.00			5.00			5.00		
Tide	Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood		
Trial	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average
Water Temperature (°C)	25.2	25.2	25.2	27.8	27.8	27.8	22.8	22.7	22.8	23.0	23.1	23.1	23.0	22.9	23.0	22.6	22.5	22.6	21.9	21.8	21.9	22.4	22.5	22.5	24.3	24.3	24.3	26.0	25.9	26.0
Salinity (ppt)	30.6	30.6	30.6	31.0	30.9	31.0	31.7	31.6	31.7	31.9	31.8	31.9	29.9	30.0	30.0	29.3	29.4	29.4	30.1	30.2	30.2	30.3	30.4	30.4	29.6	29.7	29.7	29.9	30.3	30.1
D.O. (mg/L)	3.43	3.35	3.4	3.81	3.77	3.8	3.60	3.64	3.6	3.40	3.36	3.4	3.73	3.76	3.7	3.81	3.80	3.8	3.39	3.43	3.4	3.57	3.50	3.5	4.06	4.06	4.1	4.15	4.15	4.2
D.O. Saturation (%)	52.6	51.8	52.2	54.7	54.0	54.4	52.1	52.6	52.4	48.2	47.7	48.0	51.8	52.4	52.1	53.2	53.1	53.2	49.8	50.4	50.1	51.4	50.5	51.0	57.5	57.5	57.5	58.5	58.5	58.5
Turbidity (NTU)	4.85	4.76	4.8	4.28	4.35	4.3	5.10	5.02	5.1	4.65	4.69	4.7	4.29	4.35	4.3	3.61	3.65	3.6	4.69	4.62	4.7	4.89	4.82	4.9	3.67	3.65	3.7	3.59	3.60	3.6
SS* (mg/L)	5.0	5.0	5.0	4.5	4.5	4.5	5.5	5.5	5.5	5.0	5.0	5.0	4.5	4.5	4.5	3.8	3.8	3.8	4.8	4.8	4.8	5.0	5.0	5.0	3.8	3.8	3.8	3.8	3.8	3.8
Remarks	No construction activities were observed.			No construction activities were observed.			General Earth Works			General Earth Works									No construction activities were observed.			General Earth Works			General earth work			General earth work		

* For the values of suspended solids less than 5mg/L (POL), the results are for reference only. POL stands for practical quantitation Limit, or lowest reporting limit, which is estimated from the method detection limit (MDL). Normally POL is about 5 tim

Within Action Level ?

Date	4/20/2009		4/20/2009		4/22/2009		4/22/2009		4/24/2009		4/24/2009		4/24/2009		4/27/2009		4/27/2009		4/27/2009		4/29/2009		4/29/2009	
D.O. (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y
Turbidity (NTU)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SS (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Within Limit Level ?

Date	4/20/2009		4/20/2009		4/22/2009		4/22/2009		4/24/2009		4/24/2009		4/24/2009		4/27/2009		4/27/2009		4/27/2009		4/29/2009		4/29/2009	
D.O. (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Turbidity (NTU)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SS (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Water Quality Monitoring Results for Station 5

Date	4/20/2009			4/22/2009			4/22/2009			4/24/2009			4/24/2009			4/27/2009			4/27/2009			4/29/2009			4/29/2009						
Time (hh:mm)	09:35 - 09:48			13:30 - 13:42			10:38 - 10:50			15:45 - 16:00			11:45 - 12:00			18:12 - 18:15			7:45 - 7:58			13:46 - 14:00			8:36 - 8:50			14:20 - 14:32			
Ambient Temperature	28			30			24			24			24			23			22			23			23			27			
Weather	Drizzle			Cloudy			Cloudy			Cloudy			Cloudy			Cloudy			Cloudy			Cloudy			Fine			Fine			
Water Depth (m)	4.20			3.00			3.80			4.40			4.40			4.80			3.80			4.20			5.80			4.00			
Monitoring Depth	5.00			5.00			5.00			5.00			5.00			5.00			5.00			5.00			5.00			5.00			
Tide	Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood			Mid-Ebb			Mid-Flood			
Trial	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	Trial 1	Trial 2	Average	
Water Temperature (°C)	25.0	25.1	25.1	27.9	27.7	27.8	22.7	22.7	22.7	23.2	23.2	23.2	23.2	23.3	23.3	22.5	22.4	22.5	21.8	21.7	21.8	22.6	22.5	22.6	24.2	24.3	24.3	26.0	26.1	26.1	
Salinity (ppt)	30.6	30.7	30.7	30.8	30.8	30.8	32.0	32.0	32.0	31.9	32.0	32.0	29.5	29.6	29.6	29.1	29.1	29.1	30.2	30.3	30.3	30.3	30.4	30.4	30.4	30.4	30.5	30.5	30.0	30.2	30.1
D.O. (mg/L)	3.67	3.60	3.6	3.46	3.42	3.4	3.84	3.80	3.8	3.57	3.52	3.5	4.05	4.10	4.1	3.86	3.86	3.9	3.49	3.52	3.5	3.52	3.55	3.5	3.98	4.00	4.0	3.96	3.97	4.0	
D.O. Saturation (%)	55.4	54.2	54.8	49.6	49.0	49.3	53.8	53.3	53.6	50.3	49.6	50.0	56.7	57.4	57.1	54.4	54.4	54.4	51.3	51.7	51.5	51.0	51.4	51.2	56.5	57.0	56.8	56.3	56.4	56.4	
Turbidity (NTU)	5.11	4.99	5.1	4.65	4.74	4.7	5.24	5.21	5.2	4.58	4.63	4.6	3.43	3.45	3.4	3.48	3.51	3.5	4.71	4.73	4.7	5.07	5.13	5.1	4.08	4.07	4.1	4.11	4.10	4.1	
SS* (mg/L)	5.5	5.5	5.5	4.8	4.8	4.8	5.5	5.5	5.5	5.0	5.0	5.0	3.5	3.5	3.5	3.5	3.5	3.5	5.3	5.3	5.3	5.5	5.5	5.5	4.5	4.5	4.5	4.5	4.5	4.5	
Remarks	No construction activities were observed.			No construction activities were observed.			General Earth Works			General Earth Works									No construction activities were observed.			General Earth Works			General earth work			General earth work			

* For the values of suspended solids less than 5mg/L (PQL), the results are for reference only. PQL stands for practical quantitation Limit, or lowest reporting limit, which is estimated from the method detection limit (MDL). Normally PQL is about 5 tim

Within Action Level ?		4/20/2009			4/22/2009			4/22/2009			4/24/2009			4/24/2009			4/27/2009			4/27/2009			4/29/2009			4/29/2009			
Date	4/20/2009																												
D.O. (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Turbidity (NTU)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SS (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Within Limit Level ?		4/20/2009			4/22/2009			4/22/2009			4/24/2009			4/24/2009			4/27/2009			4/27/2009			4/29/2009			4/29/2009			
Date	4/20/2009																												
D.O. (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Turbidity (NTU)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SS (mg/L)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Figure I1 - Water Quality Monitoring Results (Mid Ebb)

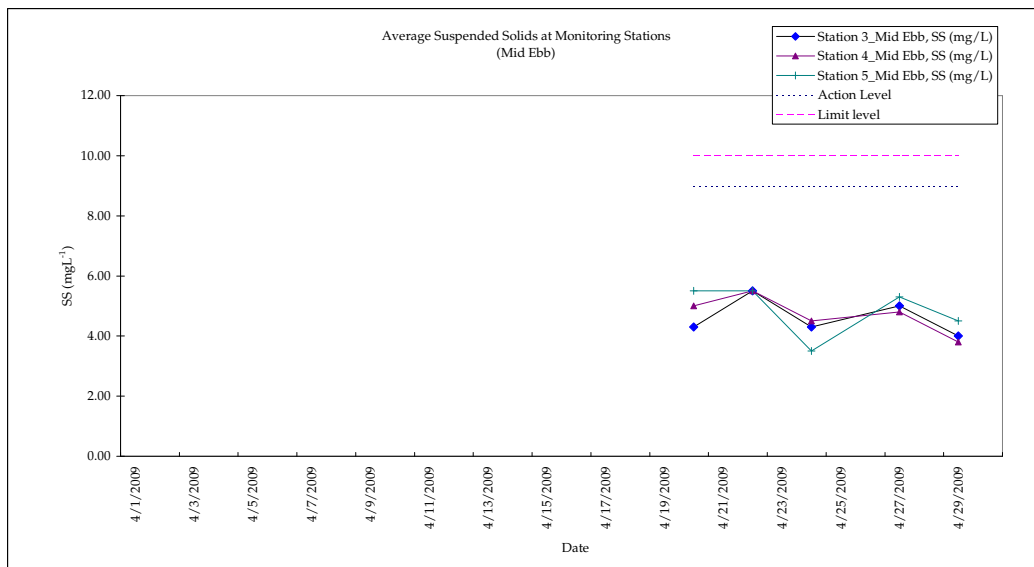
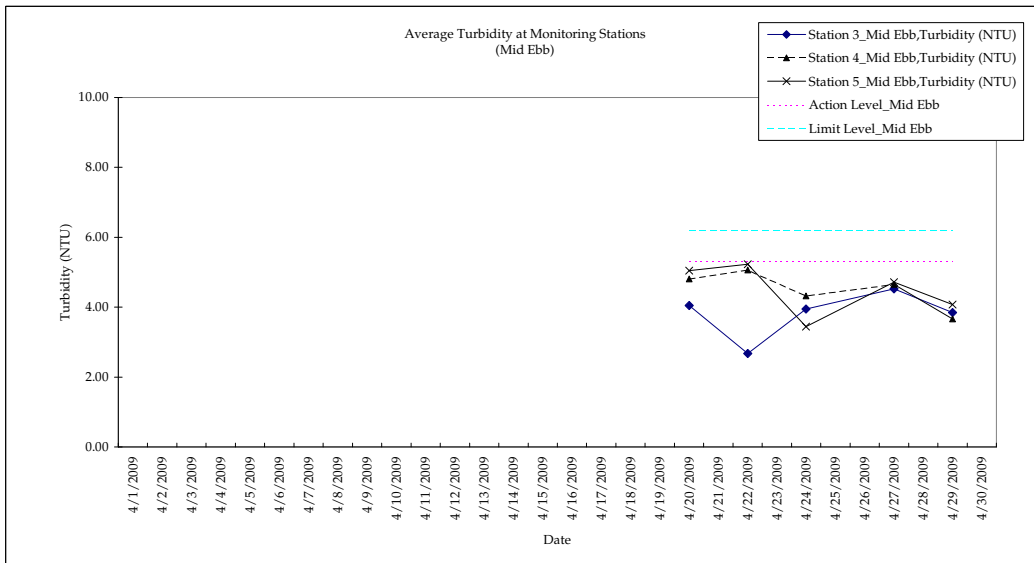
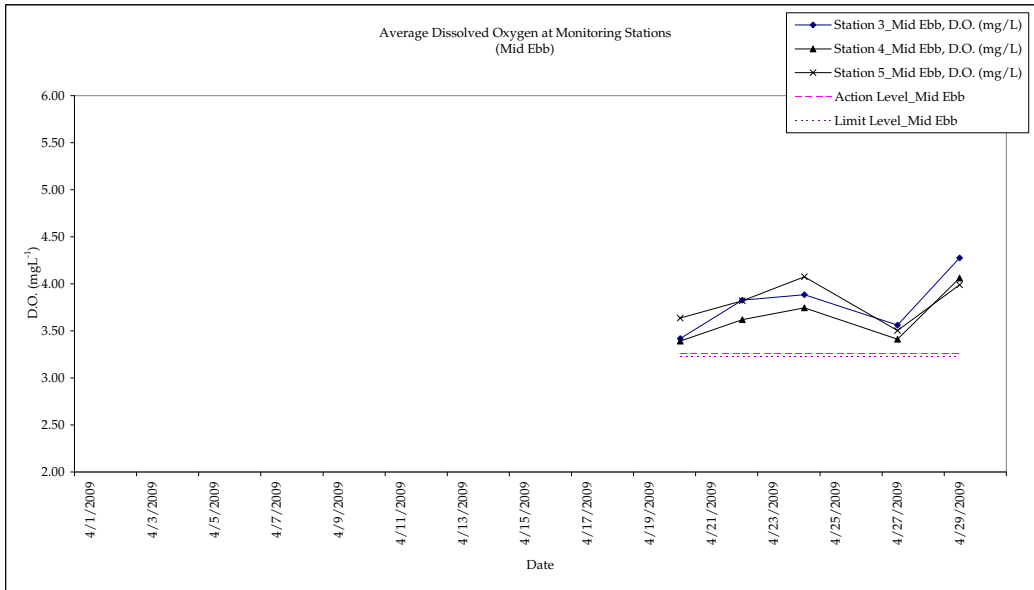
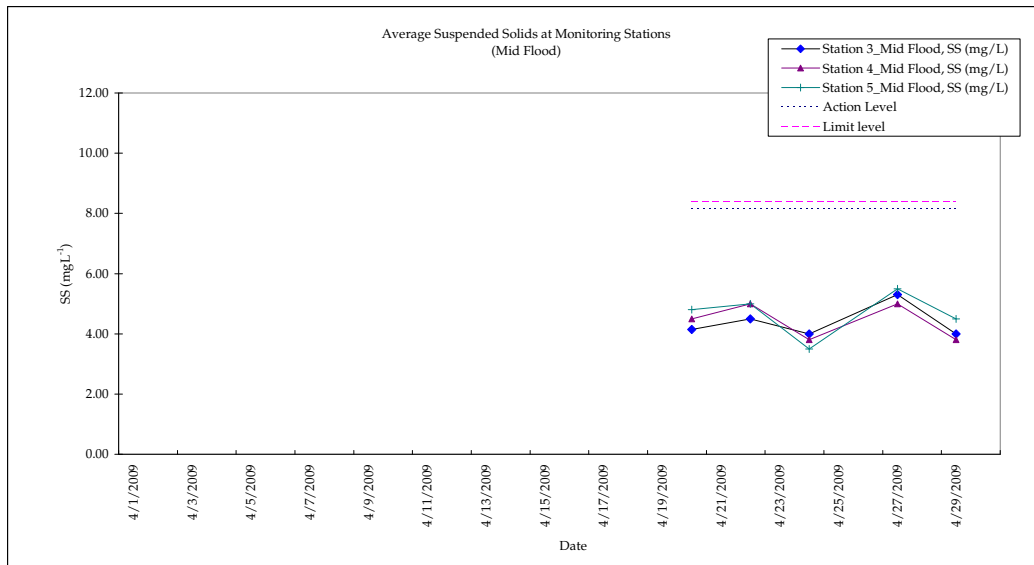
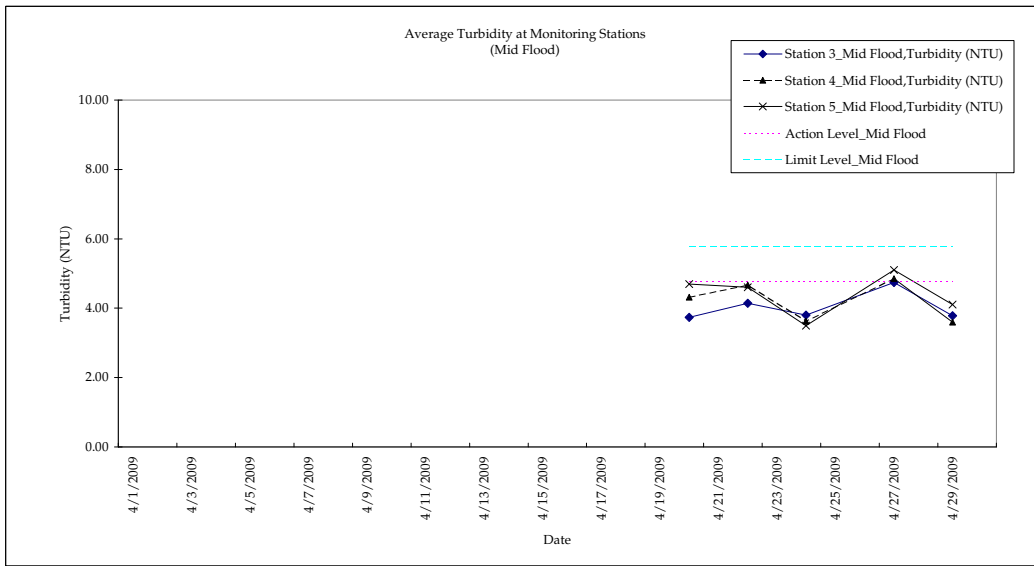
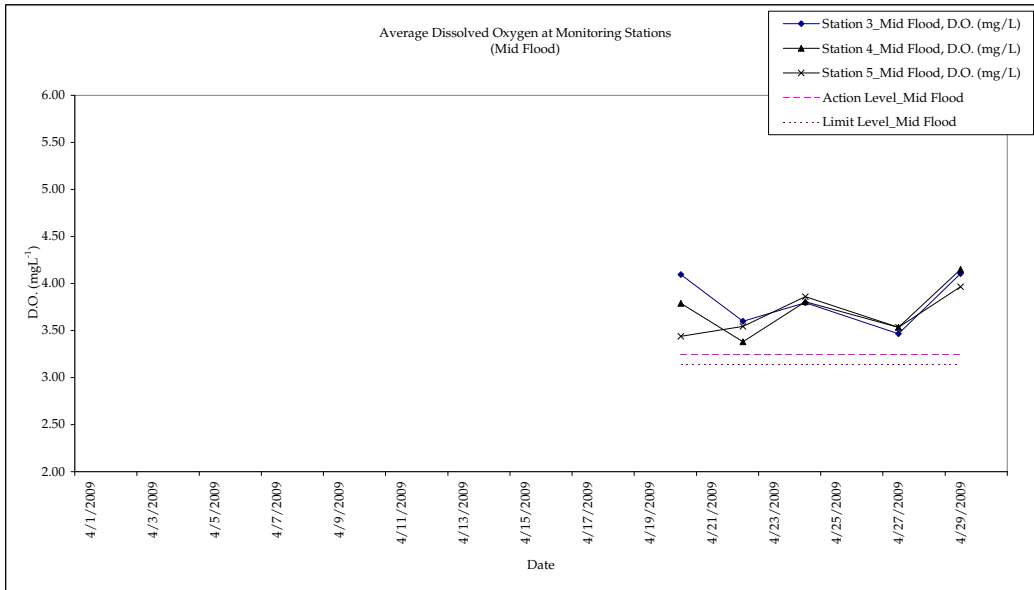


Figure I2 - Water Quality Monitoring Results (Mid Flood)



Annex H

Waste Flow Table

HKCEC – Expansion Project

Name of Project Proponent: HKTDC

Project Commencement Date: 1 Aug 2006

Construction Completion Date: June 2009

Monthly Summary Waste Flow Table for Year 2009

Year	Actual Quantities of inert C&D Materials (in 10 ³ Kg) ⁽¹⁾⁽²⁾					Actual Quantities of C&D Wastes (in 10 ³ Kg) ⁽⁴⁾									
	Total Quantity Generated	Broken Concrete ⁽³⁾	Reused in the Contract	Reused in other Projects ⁽³⁾	Disposed as Public Fill	Steel Materials				Paper/cardboard packaging		Chemical Waste (L)		General refuse	Other waste ⁽⁶⁾
						Demolition of existing Atrium Link		Demolition of existing working platform		Recycle	Disposal	Recycle	Disposal	Disposal	Disposal
						Recycle	Disposal	Recycle	Disposal						
(a)	(b)	(c)	(d)	(a)-(b)-(c)-(d)	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Disposal	Disposal	
January	485.8	0	0	0	485.8	6 ⁽⁵⁾	0	0	0	0.3	0.05	0	0	815	370.5
February	105.0	0	0	0	105.0	0	0	0	0	0.3	0.05	0	0	1610	586.5
March	305.0	0	0	0	305.0	0	0	3.0	0	0.3	0.05	0	0	927.5	250.8
April	200.0	0	0	0	200.0	0	0	3.0	0	0.3	0.02	0	0	312.5	210.5
May															
June															
July															
August															
Sep															
October															
November															
December															
Total	1095.8	0	0	0	1095.8	6 ⁽⁵⁾	0	6.0	0	1.2	0.17	0	0	1240.0	1418.3

Note: ⁽¹⁾ Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.

⁽²⁾ Inert C&D material mainly generated from demolition of atrium link.

⁽³⁾ Broken concrete fro recycling into aggregates.

⁽⁴⁾ C&D wastes include steel materials generated from demolition, paper / cardboard packaging waste, chemical waste and other wastes such as general refuse. Wastes other than general refuse will be disposed of at Tsung Kwan O Area 137 temporary construction waste sorting facility.

⁽⁵⁾ Waste from demolition of steel structure at existing Atrium Link of HKCEC (Phase 2).

⁽⁶⁾ Wastes include materials associated with additional and alternation (A&A) works of HKCEC (e.g. demolition of E&M equipment and finishing materials, bamboo scaffolding) and piling works.